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Behavioural Sciences/Health Services Research

Determinants of productive efficiency in Finnish Public Dental Service

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The aim of this study was to investigate the determinants of cost efficiency in the Public Dental Service (PDS), which, when the study was performed, was responsible for most dental care for the population 40 years and younger. Personnel and material costs were used as input and numbers of treated patients in 3 different age groups as output variables. Economic TOBIT analysis was used to explore various predictors of cost efficiency (CE), technical efficiency (TE) and allocative efficiency (AE).

According to our results the most important determinants of CE and AE were state subsidy levels, socioeconomic conditions of the municipality, treatment patterns and the emphasis on treatment of children and youngsters. High state subsidy, high number of visits per person and high proportion of 0 to 18-year-olds among the patients predicted inefficiency. Low socioeconomic conditions in the municipality predicted efficiency. The results indicate that local municipalities have failed to reallocate their resources according to the rapid improvement of dental health in young patients. It is also obvious that generous state subsidies weaken incentives for cost control locally. Many PDS units could have enhanced allocative efficiency by allocating their personnel resources more optimally. **Conclusions: Many PDS units seemed to underperform. It is a big health political challenge to improve the productive efficiency of PDS.**

Self-care in oral health among Danish adults, 2001

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The oral health care services for adults in Denmark include preventive dental care whereby patients are encouraged to adapt oral self-care practices. The purpose of the present report was to describe the oral self-care habits among adults and to analyse oral self-care habits in relation to gender, age, oral health status, utilisation of the oral health services, and socio-economic conditions. A total of 7000 citizens 16 years or more were randomly selected. The response rate was 64%, and the final study population comprised 3858 dentate persons. Data on oral self-care were collected by postal questionnaires and other data were derived from personal interviews. Bivariate analysis and multivariate logistic regression were used for data analysis. Toothbrushing more than once a day was reported by 68%; 70% used toothpicks and 46% used dental floss. However, use of toothpicks or dental floss at least once a day was reported by 28% and 11% accordingly. Self-care practices in oral health were more frequent among women than men for all age groups ($P < 0.001$). Toothbrushing more than once a day was related to regular dental visits ($P < 0.001$), 10 teeth or more ($P < 0.001$), regular dental care throughout school years ($P < 0.001$), and high level of education ($P < 0.001$). Predictors for use of toothpicks were 10 teeth or more ($P < 0.001$), regular dental visits ($P < 0.001$) and high level of household income ($P < 0.001$). **The level of self-care in oral health varied significantly by socio-demographic factors and use of oral health services in adult life and childhood. The future challenge to the dental profession is to target oral health education towards those persons in need.** The study was supported by Danish Health Insurance Research Fund.

Market price of service mixes in free public dental care

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The objective of this study was to compare the number of dental visits to free public dental care and the market price of service mixes in Helsinki public dental care. In Finland in 1999, all under 19 years of age were entitled to free public dental care. In Helsinki, altogether 67 309 such patients visited a public dental clinic in 1999, 47 826 receiving comprehensive dental care. Data were taken from ADP files recorded by patient and visit. Each item of treatment has an individual code showing the type of service. Market prices for service mixes were obtained from the statistics on private dental care in Helsinki, provided by the consumer authorities. Median price for each item of service was used. Mean number of visits among 0- to 5-year-olds was 1.4 (SD 1.1), among 6- to 15-year olds 3.7 (SD 3.5) and among 16- to 18-year-olds 3.0 (SD 2.7), respectively. Orthodontic treatment was given to 18 per cent of all 0- to 18-year-old patients, and every fourth dental treatment given to 6- to 15-year-olds involved orthodontics. Patients with orthodontic treatments (ORT) made 7.2 visits compared to 2.2 for those with no orthodontics (NORT) group. The average market price of all treatments per patient was 49.7 € for 0- to 5-year-olds, 170.2 € for 6- to 15-years-olds, and 155.5 € for 16- to 18-year-olds. The average market price for all dental treatments was 289.5 € per patient in the ORT group and 105.9 € in the NORT group. **The comparatively larger proportion of orthodontic treatments**

may well account for the high market price per patient of services given to 6- to 15-year-olds. A grant by the Helsinki City Health Department to SKJ.H. is highly appreciated.

Optimum fluoride concentration in water supply in Rio de Janeiro City

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It is well established by the dental literature that optimum fluoride concentration in the water supply is a recognised preventive method against caries disease lesions. In spite of this method has been recommended for many years in Brazil, it seems that there is not an effective control over its utilization in this country. Objective: The aim of the present study was to quantify the fluoride concentration in the water supply of the different regions of Rio de Janeiro city. Material and methods: The water samples were collected from 9 regions of the city during 6 months to evaluate the real situation of this important method of health promotion. Results: The medium value of fluoride concentration was only 0,21 ppm. Conclusion: The results show that the fluoride concentration has been insufficient for caries prevention and that intensive work should be implemented by the local authorities.

Refusal of treatments recommended for adults in public and private dental care in Finland

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The present study assessed adult patients' refusal of recommended treatments and reasons for refusal in the public and private sectors in Finland. The numbers of dentists working in both sectors are approximately equal, private dentists working mainly with adults. A postal questionnaire was mailed to general practitioners (n=400) selected by stratified randomisation among members of the Finnish Dental Association. The sample was restricted by gender, age (30-39 and 40-49), and main occupation (public or private sector). The response rate was 77%, from 146 private dentists and 165 public-sector dentists. The dentists were asked to report the most recent refusal of recommended treatment, such as fixed prosthetic restoration, removable prosthesis, implant therapy, periodontal treatment, extraction or surgery on a tooth, restorative treatment, endodontic treatment, or radiograph. Further, reasons for refusal were separately determined, the alternatives being high cost, dental fear, no perceived need, long treatment time, and others. Statistical evaluation was made by the Chi-square test. The refusal most frequently reported was related to fixed prosthetics (25%), followed by extraction or surgery on tooth (23%), implant therapy (13%), and removable prosthesis (11%). Compared to public sector dentists, private dentists reported more frequent refusal of fixed prosthetics (30% vs. 19%, p=0.04), but less frequent refusal of extraction or surgery on tooth (29% vs. 18%, P=0.03). The reason most frequently reported for refusal was high cost (45%), followed by no perceived need (30%), and dental fear (16%). **The refusals most frequently reported were related to prosthetic treatments, the reason mainly being high cost.** Financial support by The Finnish Dental Society Apollonia and co-operation of the Finnish Dental Association are gratefully

acknowledged.

Service-mix in free public dental care for 6- to 15-year-olds in Helsinki, Finland.

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The present study evaluated the quantity and content of free public dental care for 6- to 15-year-olds in Helsinki, Finland. In Finland, the public oral health service provides all dental care free of charge for all under 18 years of age. Participation is almost 100% at ages 6 to 15. Comprehensive dental care (CDC) is the main line of the service including regular dental check-ups at individual recall intervals followed by all treatments needed. Between treatment courses patients may receive supplementary dental care (SDC) due to acute problems or to continue with treatments, previously started, e.g., intensified caries prevention or orthodontics. Annual data on services and oral health indices are recorded in ADP files by patient and by visit, with an individual code for each item of service. Indices of DMFT and DT+dt are recorded in CDC, but never in SDC. In 1999, a total of 43,850 patients aged 6 to 15 had been treated, 77% were in CDC, their mean DMFT index being 1.1 and mean DT+dt 0.6. All patients made, on average, 3.7 visits (SD 3.5; max 28), with no difference seen in CDC and SDC patients. Orthodontics involved 25% of all patients, 23% in CDC, and 34% in SDC ($P=0.000$). Correspondingly, sealants were placed in 26% and 21% ($P=0.000$) of patients, but any other caries prevention was given similarly (29%) to CDC and to SDC patients. Fillings were made in 35% of those in CDC, and in 20% of those in SDC. Mean number of fillings placed was 0.8 in CDC and 0.4 in SDC, and of orthodontic treatments 1.6 and 2.8. **Despite the full coverage of CDC during school age, one-fourth of the patients received SDC, the service-mix being dominated by orthodontics but not by intensified caries prevention.** A grant by Helsinki City Health Department to SH is gratefully acknowledged.

The trends of toothbrushing habits of Finnish adolescents from 1977 to 2001

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The aim of this study was to find out the trends of toothbrushing habit among the Finnish adolescents between 1977 and 2001. For decades twice a day toothbrushing habit has been recommended by the dental and general health care personnel in their health education. The Adolescent Health and Lifestyle Survey is based on self-administered questionnaires mailed to a representative sample of 12-, 14-, 16-, and 18-year-old Finns every second year since 1977. The sample sizes in the surveys have varied from 2,422 to 11,105, making a total of 77,230 subjects in this entire study. Toothbrushing frequency has been asked in every survey. Twice a day toothbrushing seemed to increase quite consistently, but slowly over this 24-year period among boys. This increase was only 5-6% among 12-, 16-, and 18-year-old boys and 10%

among 14-year-old boys. Among girls the proportions of recommended brushing increased from 1977 to 1979 among 12-year-olds, to 1981 among 14-year-olds, to 1983 among 16-year-olds, and to 1985 among 18-year-olds, but decreased since then among 16-year-olds by 14% and among 18-year-olds by 16%. There has been a slight increase in proportions of subjects with recommended toothbrushing in all regions, except in the Northern Finland. The difference between capital and the rural areas has stayed consistent. The children of less educated parents have slightly improved their brushing, but the children of well educated parents deteriorated their brushing. It may be concluded that there has been small progress in toothbrushing habit reported of Finnish boys, but only 20-30% of them are still brushing according to recommendation. Among girls there has been a consistent declining trend. There is still much to do in establishing appropriate toothbrushing habits among the Finnish adolescents.

Dental anxiety, caries and parental dental anxiety among Finnish children

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Our aim was to study children's dental anxiety in relation to their caries status and parental dental anxiety. Independent random samples of all children aged 3, 6, 9, 12 and 15 years were drawn in the towns of Kuopio and Jyväskylä in 1998. The sample included 180 children from each age group in both towns. Caries was registered clinically and radiographically by calibrated dentists. Children's and their parents' dental anxiety were measured with a single 5-point Likert-scale question. DMFS and dmfs were dichotomized as 0=caries-free, 1=one or more carious lesions. The numbers of children included in the final analysis were 290 (3 yrs), 302 (6 yrs), 299 (9 yrs), 314 (12 yrs) and 297 (15 yrs) with the total response rate being 83%. The percentage of children who reported to be somewhat, fairly or very anxious were 33, 28, 16, 13 and 13%, in each age group, respectively. Of the dentally anxious children among 6-, 9-, 12- and 15-year-olds, 89, 83, 64 and 82% reported to be afraid of pain, respectively. The respective percentages of children being afraid of drilling were 68, 71, 57 and 64%. Only among 3-year-olds, children with dental anxiety had caries more often than children reporting no anxiety ($\chi^2=4.67$, $P=0.044$). Children whose parents reported being dentally anxious were consistently more often anxious than children whose parents reported no dental anxiety ($\chi^2=10.88$, $P=0.002$ for father's anxiety and $\chi^2=8.30$, $P=0.006$ for mother's anxiety when all the data were pooled). **In general, children's dental anxiety was associated with their parents' dental anxiety but not with their own dental caries status.** This study was supported by the Yrjö Jahnsson Foundation.

Dentist managed intervention program to reduce ETS exposure during infancy

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The aim of the study was to demonstrate the effectiveness of dental practitioners in Hungary in implementing techniques previously tested in San Diego, California to help patient families in

reducing children's environmental tobacco smoke (ETS) exposure and quitting smoking. The objectives of this study were: 1) To determine whether counseling provided by midwives in general pediatric and general dental practices reduces ETS exposure compared to control families, as measured by parent reports and children's urine nicotine analyses, 2) To determine the differential effects of the intervention as measured by the proportion of mothers who quit smoking compared to control families, 3) To determine the differential effects of the intervention and control procedures on environmental nicotine levels in participants' homes. The intervention group received eight behavioral counseling sessions over three months. Counseling was directed to the mothers, and other parents/smokers living in the home were encouraged to participate. Counseling incorporated behavioral contracting, shaping, and problem-solving negotiations, and motivational enhancement strategies for smoking cessation. Outcome measures were obtained at baseline, 3- and 6 months. Measures included a detailed interview concerning smoking and ETS exposure rates, key Social Learning Theory variables, and children's health care utilisation. Children's urine samples were analysed for cotinine. Self-reported smoking cessation was verified with cotinine analysis. A longitudinal two-groups experimental design used by mothers with a child from two to eight years exposed to their mother's tobacco smoke at home will be recruited to participate in the study. Families within offices were assigned (30/group) at random to: 1) usual medical care control plus advice from the dentist to quit smoking and to smoke only outside the home to protect their children from ETS exposure, 2) midwives/dental hygienist counseling for smoking cessation and reduction of the child's exposure to ETS. Urine samples were obtained at interview by the dental intern. If mothers or other family members quit smoking, we asked to give saliva or urine samples to verify. The preliminary results demonstrate efficacy. **Thus this model could be good for expanding ETS/cessation services in dental offices throughout Hungary.**

Dental Nurse workforce and training needs in General Dental Practice

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The objectives of this study were to identify the Dental Nurse workforce in Kent and their training requirements. At present Dental Nurses in the UK do not have to be qualified or registered so it is difficult to assess the size of the workforce. By 2004 this will change with a Dental Nurse Register being held by the General Dental Council. New Dental Nurses entering the register will have to be qualified and there will be an expectation for all nurses to take part in Continuing Professional Development(CPD). A questionnaire was sent to all dental practices in Kent asking for details of their dental Nurses' qualifications, recruitment and training. Following a reminder, the response was 72% (n=194). From the responses, there were 702 nurses employed, representing 615 whole time equivalents. 44% had a Dental Nurse qualification and 67% of practices expected their unqualified Dental Nurses to take the National exam. Only 20% of respondents stated having a problem with staff turnover but 53% of nurses left within four years. 49% had difficulty with recruitment, 39% having advertised three or more times. Two thirds said this was due to difficulties in finding the right person rather than enough people applying, with half taking more than two months to fill a vacancy. Whilst 54% stated their Dental Nurses attended a course in the last year, mostly this was the free, practice based, basic life support course offered by the Health Authority or a course leading to the National Examination for Dental Nurses. However, 82% of respondents said they would be willing to give paid leave for their nurses to attend a course. When asked about courses, 67% wished to see training available for the National Certificate in Dental Nursing and 64% for communication skills. **There appears to be an unmet need for training and CPD for Dental Nurses in Kent.**

Identifying areas with populations at higher risk for oral disease

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Objective Can a Geographical Information System (GIS) be used to identify areas with populations at higher risk for oral disease? **Background** To target health-promoting programs, groups that are at higher risk of developing disease must be identified in a cost-effective manner. Other studies have shown that administrative areas can be used to identify such populations. Data on socio-economic status (SES) had been compiled in a GIS matrix where individuals are identified according to their addresses of residence. **Methods** The SES data was supplied by the National Bureau of Statistics and the population grouped according to a composite index, which was calculated for each of the 940 areas in the county of Östergötland (population 420 000). These were fitted in the GIS matrix and used to group the SES areas in five clusters. The routinely collected data on dental caries supplied by the Public Dental Health Service (PDHS) for all 6 and 19 years old were fitted for each individual into the GIS matrix. In all eight sets of caries data were used. The SES index and the caries data were compared using Pearssons chi-square test. **Results** Data on healthy oral conditions and on severe disease had a close and stepwise correlation to the SES clusters identified in the GIS. Healthy individuals were 50% more common in the best cluster compared with the worst. Individuals with severe disease were two to three times more common in the worst compared to the best clusters. The differences were significant for each cluster compared with all the others together. **Conclusion** SES data as composed in the SES index is a useful tool in identifying small geographic areas where the populations of children and adolescents are at higher risk of developing oral disease.

Use of dental treatment in a French young children group

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This work was conducted starting with given facts in the literature on the dental status of children from 1-5 years, and the numerical record of the use of dental care on the temporary teeth of 9.652 children benefitting from medical insurance in a French department. **Material** 9,652 children born between 21/09/94 and 01/06/98, aged 1-5 years at the beginning of the treatment taking place between 15/01/99 and 24/07/2000. **Method** The children were identified by their first names and dates of birth. No clinical examinations were conducted and only statistics were used. Orthodontic and prosthetic cases were excluded. **Results:** The outcome was that out of 9.652 children there were 26.525 treatments : 8,948 consultations (34%), 1,286 extractions (5%), 10,998 restorative treatments (41%), 1,604 hygiene treatments (6%) and 3,689 X-rays (14%). This treatment was received by 43% of children aged from 1-3 years and by 57% of children from 4-5 years. Altogether 45% of the treatments were conducted on 4-year olds, who made up 42% of the group. **Conclusion** This study shows the necessity to extend preventive measures for children from 3-5 years, to conduct the first oral-dental examination at 3 years and to use preventive program for identifying the children at risk as early as possible.

Developing the activities of the public oral health service employing the European Quality Award (EFQM) Model

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The dental department of Jyväskylä health centre was evaluated from the appraisal aspects of the Balanced Scorecard (BSC) i.e. from the viewpoints of the taxpayer, the patient, the functional processes and the staff's ability to develop. The European Quality Award (EFQM) was used as the practical tool of development from 1998 onwards. In developing measures for all aspects a remarkable change has been achieved during the 1990s; the output/input ratio as well as the effectiveness of activity is nowadays measured for every employee separately. Development work has resulted in a model of operation which enables the whole population to use municipal dental services according to the following priorities:

Children and young people (0-17 years of age), comprehensive care on a full coverage basis to assure the optimum health of the masticatory apparatus in adult age. The service covers all basic and specialised care including orthodontic treatment.

Young people and adults (above 17 years of age) with the treatment content and priorities set in the order below:

1. All people seeking dental care for an acute treatment need; access to treatment on the same day including a scheduled plan for follow-up treatment
2. People having indications for dental care derived from medical conditions
3. Clients having no need for emergency care or other health complaints described above will first come to visit the oral hygienist whose task is to give individual instruction in home care

In 2002 the cost for treatment to the taxpayer will be an average of € 35 per inhabitant of the city. Care for patients under the age of 18 is free of charge and for those aged 18 and over dental treatment is cheaper than that offered by the private sector. About 28% of the city's population utilised municipal dental services in 2001. For those examined, 9 children out of 10 below the age of 6, and 6 children out of 10 aged 6-18, had no cavities requiring fillings. The highest need of treatment using the CPI Index was 2 or greater for slightly less than one third of the adult population. The European Quality Award Excellence (EFQM) Model and the Balanced Scorecard (BSC) in combination proved to be practicable tools in the development of dental service activities.

Evaluation of an oral health education program addressed to 10-11 year-old children

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The aim of this study was to evaluate an oral health education program, which was implemented in 15 primary schools (approximately to 450 children, aged 10-11 years old) in Chalandri municipality, Athens. The program was carried out by volunteer dentists who provided a 45 minute information in each class. A questionnaire was completed in class by the children, fifteen days before and four months after the implementation of the programme. The questionnaire included twenty questions, which were grouped in knowledge and behavior categories and were statistically analysed. The statistical analysis of the data using the two-sample Wilcoxon, Mann, Whitney non-parametrical test, revealed that both children's oral health knowledge and behavior showed an overall significant positive change ($P < 0.0001$ and $P < 0.05$ respectively) between the two periods, but oral health knowledge presented better improvement. More specifically, the level of knowledge was improved most in aspects concerning fluorides, dental plaque and interdental cleaning. As far as the oral health behavior is concerned, best improvement was observed in flossing frequency and in the use of fluoride mouthwashes. In conclusion, although the dental health education program was implemented only once, it was found to be effective in some aspects.

The translation and standardisation of M-DAS into the Greek language

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The purpose of this first stage research was to give the adequate translation and standardisation into the Greek language of M-DAS (Modified Dental Anxiety Scale). The assessment of dental anxiety has provided the development of many scales, as DAS (Corah: J Dent Res 1969; **43**: 596), DFS (Kleinknecht et al. JADA 1984; **108**:59-61). The five item English questionnaire M-DAS (Humphris et al. Community Dent Health 1995; **12**:143-150), for which there is further evidence on its reliability and validity (Humphris et al. Int Dent J 2000; **50**:367-370), has been chosen to be translated in Greek. Two professors of English language made the forward and back translation of the M-DAS and then it was given in a sample of 45 persons. Thirty (30) of them were regular patients from a private practice in Athens and fifteen (15) were dental phobics attending Dental Clinic of University Hospital, in Heraklion-Crete. Test-retest to these 45 persons, with an interval of three weeks, showed that correlation between pro- and meta-test for each item and for the whole questionnaire has statistical significance ($P < 0.001$). Factor analysis gave one factor for the Greek language, as it was in English (dental anxiety). Then it was given to a sample of 110 patients attending diagnostic clinic of Dental School in University of Athens (Mean=9.95) and to another 35 phobics from the above reported hospital (Mean=20.5). The internal consistency coefficient (Cronbach α) demonstrated high levels of reliability (0.9). Data support the psychometric properties of M-DAS for the Greek language.

Greek dental students' attitudes toward tobacco control programmes

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The study explores the preparedness of Greek dental university students for advising patients to quit smoking. In addition, it examines how the awareness of the students is modified from the beginning of the university studies to the graduation and how it is associated with their smoking habits. Officially registered dental students (n=165) participated in the study and provided information by completing anonymously a 16-item questionnaire. Data analysis was conducted with the use of standard univariate statistical methods, whereas multivariate analysis was done with the logistic regression modeling. Students showed significant knowledge attainment on tobacco health effects from the beginning of their studies to graduation, although 54% of graduating students were not aware of an association between smoking and implant failure. More than 80% of the students considered tobacco cessation counseling a duty of every dentist, although 32% of the students believed it to be ineffective. Almost half of the students felt unprepared to provide tobacco counseling, whereas 86% of them were willing to participate in educational programmes specifically designed for this purpose. Students' attitudes toward tobacco cessation counseling did not differentiate from the beginning of their studies to their graduation, although they were modified by personal smoking habits, while never smokers being significantly more optimistic than smokers about the effectiveness of tobacco cessation activities. **Dental school students represent a promising baseline for education on tobacco control protocol development and clinical tobacco cessation intervention techniques.** This study was supported by the University of Athens Special Account for Research Grants.

Oral self-care behaviors: comparing Greek and Japanese dental students

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The purpose of the investigation was to explore cross-cultural differences of self-reported oral health behavior between Greek and Japanese dental school students. Eight hundred seventy seven dental students were enrolled in the study, 539 students registered at the University of Athens Dental School, and 338 registered at the Hiroshima University Dental School. Oral health behavior was assessed by using, respectively, the Greek and Japanese versions of a 20-item questionnaire entitled Hiroshima University - Dental Behavioral Inventory (Kawamura. Hiroshima Univ Dent Soc 1988; 20: 273-286). The mean questionnaire score of the Japanese students (7.40) was significantly greater than that of the Greek peers (6.86, P=0,001), however, the overall difference was mainly attributed to the 6th study year of the Japanese students. From the examination of independent questionnaire items through logistic regression modeling, it was discovered that there existed considerable differences in dental health attitudes/behavior among students in the two countries. This finding reflected different culture and health education system of the students. **The results suggest that it is possible to distinguish Greek dental students from Japanese peers with a probability of more than 89% by using the HU - DBI instrument.**

Model for calculating treatment time based on dental needs of children in a community programme in Stockholm County

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Children up to 19 years of age get free dental care in Sweden. Dentists are paid by County Councils for giving this care. There have been various views about the size of the reimbursement (fixed fee per child). Therefore, the Dental Care Committee of the Stockholm County Council has presented a new calculating model, based on the needs of children in different districts of the County. Needs are transformed into treatment time required to give appropriate care. Treatment time can, in turn, be expressed in monetary terms. A prerequisite for calculation is good epidemiology that gives information about the number and age of children and their dental health so that frequency distributions of caries lesions can be obtained. Dentists were asked to design different treatment plans depending on age and number of caries lesions, including examinations, fillings, prophylaxis, calculated risk for injuries and periodontal disease (specialized dentistry and collective prophylaxis were not included here). Five such treatment groups were defined for children in each age group to be called to dental check-ups. Treatment time for each treatment group could be calculated using data obtained from dentists on how many minutes were needed for each dental care measure. When the mean treatment time of all children in different districts of the County was calculated for a two-year period, there was a span from 33 to 100 minutes. The total average for the County was 70 minutes. The longest mean times were found in districts with the lowest socio-economic levels. The results will be used to determine a differentiated fee, based on the proportions of the various treatment groups requiring different treatment times. Dentists will thus get different fees depending on where the children live, instead of the fixed capitation fee that is used today.

Evaluation of an AIDS education program in a Greek high school

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This report presents the findings of a baseline and follow-up survey, of high school students of the town of Livadia, Greece. By February through May 1997 the Dept. of Sociology of the Greek National School of Public Health, implemented an AIDS education program in all town high schools. A group of voluntary students, with the supervision of teachers and two dentists, members of the scientific team, were in charge of the implementation of special events in their respective high school. Self-administered questionnaires were distributed to the students of demonstration schools at baseline and after one year of programme, in order to measure the attitudes and beliefs about AIDS. Certain indicator variables were included for the evaluation of the program. The number of participants at baseline was 244 students (mean age=16 years) and at follow-up 138 students (mean age=16.5 years). The great majority (70%) of students seems to know the general modes of transmission of HIV and 93% of the students stated that they wouldn't leave their friend in case he/she is HIV+. Boys seem to be more sexual active and also more careful with their relationship than girls ($P < 0.001$). One year after the programme, students seem to have better knowledge about the wrong ways of infection with HIV and a greater awareness about the importance of choosing their relationship ($P < 0.05$). Both at baseline and follow up, there is a need for information by specialists, with active involvement of the school community, the families and the local community. **In conclusion, students seem to have a good knowledge about AIDS but clarification of the exact ways of transmission of**

HIV and the negative feelings concerning the social consequences of the infection, have to be analyzed in with long-term school-based interventions, where dentist can play a major role.

Pain perception by parents of children with Down syndrome

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The objective of this study was to investigate parents' ability to perceive pain experienced by their offspring with Down syndrome (DS). It has been suggested that individuals with intellectual disability may have a decreased responsiveness to pain and that it may therefore be difficult for parents or carers to identify pain-related suffering in their wards (Fanurik et al. *Dev Behav Pediatr* 1999;20:228-234; Hennequin et al. *Lancet* 2000;356:1882-1887; Biersdorff KK, *Am J Ment Retard* 1994; 98:619-631). Data were gathered from parents of persons with DS in a cross-sectional survey using the Oral Assessment - Down Syndrome questionnaire (Allison PJ, Hennequin M, *Community Dent Health* 2000;17:172-179). Of 350 questionnaires distributed, 204 responses relating to a child with DS (58.3%) and 161 relating to a sibling were returned. 26-33% of parents had difficulty discerning if their child with DS was in pain, according to age, and they had difficulty discerning where the child felt pain in 68% of the younger group (<8 years) and 22% of the older group (>8 years). Parents had much greater difficulty discerning pain experience for their child with DS than for the sibling nearest in age. Overall reports of pain experience were the same, however, for both children with DS and their siblings. **These findings suggest that while parents' ability to detect pain felt by their child with DS is frequently compromised, they report the same dental pain experience for the child with DS as for a sibling without DS.** This research was supported by the Coopération France-Québec, Programme Sciences et Technologie en Santé-Recherche Médicale and the Fédération des Associations pour l'Insertion des Personnes Porteuses d'une Trisomie 21.

Cariology Research

Root surface caries in Hellenic elderly population

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Root surface caries (RSC) is a subject of increasing interest in the industrialised countries, as the elderly population is growing and more teeth are retained into old age. The aim of this study was to determine root surface caries in Hellenic old people and the differences in prevalence between institutionalized and non-institutionalized old individuals. **Material and methods** A total number of 829 dentate old men and women, over 65 years were examined for RSC in 7 nursing homes (184 persons) and in 12 Municipal Daily Open Care Centers for the Elderly (645 persons). All teeth were sound or had restoration or prosthetic crowns. The root surfaces were scored as follows: recession with a decayed root surface, recession with a filled root surface or recession with a sound root surface. The prevalence of RSC was evaluated using Root Caries

Index (RCI). **Results** Non-institutionalised old people had 8 remaining teeth, 7,5 teeth with recession, 2 teeth with RSC and mean RCI was 28,71. Institutionalised old people had 4,5 remaining teeth, 4 teeth with recession, 3 teeth with RSC and mean RCI=89,22. **Conclusions** The prevalence of RSC in Hellenic old individuals is higher than reported from other industrial countries and RSC most frequently affected the institutionalised people.

The results and experiences from ART in Latvia

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ART is technique, which is based on excavation of carious cavities using hand instruments only and restoring them with glass-ionomer cement. The new glass-ionomer "ChemFlex™" has been introduced with improvements in mechanical strength and a better handling.

The aim of the clinical trial was to test a long-term performance of the new glass-ionomer in class I and II cavities in the permanent dentition of Latvian school children using ART technique. 41 children were enrolled in the study and their age varied from 8 to 14 years (mean 11 years). They were randomly allocated into the control and the test groups. Altogether 63 restorations were placed. The test group comprised 40 restorations and the control group 23, respectively. FUJI IX™ glass ionomer was used as the control material. At the 3-year assessment only 62% (n=39) of fillings were assessed, 69% (n=27) for the test and 31% (n=12) for the control. According to criteria for ART restorations the results for the test material in class I revealed 59% (n=16) success and 15% (n=4) non success, where repair was needed. In class II 19% (n=5) were successful and 7% (n=2) non successful, where repair was needed. The control material in class I showed 92% (n=11) success and 8% (n=1) non success, where repair was needed. The test and control sealants showed 25% (n=5) and 33% (n=4) complete retention, where 75% (n=15) and 66% (n=8) were lost.

It can be concluded that the sample size after 3 years has been dramatically reduced, but the new glass-ionomer material for 3-year period has shown a satisfactory performance in terms of retention, marginal failure and fractures in all class I and class II cavities.

Caries prevalence among 9-year-old children in Germany in the years 1994 to 2000

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Ten years ago, the federal legislature in Germany passed a law requiring the national health insurance system to pay for preventive measures which subsequently were introduced in schools and private practices. In 1993 public health insurance agreed to cover the preventive sealing of fissures.

To control the effectiveness of this system, examinations of representative samples of 9-year-old children were performed in twelve federal states in 1994, 1997 and 2000. DMF-T-values

were assessed according to WHO-criteria. The samples were selected by a two-stage random procedure and consisted of 15419 (1994-95), 19464 (1997) and 18441 (2000) children. All examinations were performed in schools by calibrated dentists with the aid of dental mirrors, explorers and artificial light. DMF-T- and dmf-t-values were recorded according to WHO criteria. For the statistical analysis a special programme for dental surveys (GPRZ) was used.

Between 11.8% and 30.4% of the children in the various federal states had a sound dentition in 1994/95, while in 2000 this figure was between 27.7% and 46.5%.

In the first examination (1994/95) mean D3+4MF-T values between 0.7 and 1.6 were found, while after the third evaluation D3+4MF-T values between 0.31 and 0.75 were observed. These differences were statistically significant ($P < 0.05$, U-Test). Thus the caries reduction ranged from 28% to 65.8% in a time span of 6 years. The mean D3+4MF-T values for Germany decreased from 0.98 in 1994 to 0.59 in 1997 and 0.45 in 2000. It is concluded, that caries prevalence differs in the various German federal states. Nevertheless, due to intensified preventive measures in all German federal states caries prevalence has been reduced considerably.

Acid resistance of enamel treated with aluminium and fluoride: A PLM study

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Concerning the prevention of dental caries and especially for caries risk persons, much attention has been given to the search for optimal methods of remineralisation of incipient enamel caries. Among other agents, Al salts have been proposed, in many studies, as having cariostatic properties. The purpose of this *in vitro* study was to investigate the ability of Al and F solutions to remineralise presoftened bovine enamel and enhance its resistance to acid using Polarised Light Microscopy. Forty presoftened bovine enamel slabs were subjected daily to two demineralisation and two remineralisation cycles for six days. The slabs were immersed twice daily for 1 minute in Al and F solutions. At the end of the cycles the slabs were exposed to a 5-day Acid Resistance Test without any further treatments. At the end of the ART all slabs were cut in thin sections of 100-140 μ for polarised light examination. The photomicrographs revealed a resistant surface zone covering the subsurface lesion in all groups of slabs apart from the negative control. The same findings were also previously found using surface microhardness measurements. The results of the present study show that topical treatments with Al solutions applied alone or in combination with F can decrease enamel acid dissolution. The experimental model used in this study simulates to a degree the real oral cavity conditions and the application time of the solutions used is one minute, so it could be applied *in vivo*.

Diagnostic Systems

Economic evaluation of tolonium chloride for the early detection of oral cancer

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Aim The primary aim of the study was to estimate the cost-benefit of a model screening program for oral cancer (OC) in Greece. The program targets 100,000 high-risk individuals and utilizes tolonium chloride (Oratest, Zila Inc.) as a diagnostic adjunct to biopsies of subclinical lesions. **Methods** Heavy smokers and drinkers, persons with history of oral cancer and patients with premalignant lesions composed the screening population. Data from a comprehensive case-control study of 110 cases and 115 controls was used to calculate the expected incidence of oral cancer in each group and the expected TNM staging of the disease. A separate hospital record review was performed in 93 OC patients to identify the relative 5-year mortality rate, which ranged from 35% for Stage IV lip lesions to 95% for Stage I (floor of the mouth lesions). The range of treatment options and procedures per stage of disease was also recorded.

Results Respective treatment costs (current market values) were stratified according to TNM stage. Significant cost increases were observed in stages III and IV, as compared with stages I and II ($P < 0.05$), mainly due to increased hospitalization and multi-modality treatment for later stages. The cost-benefit model of the tolonium chloride selective screening program for high-risk individuals (sensitivity: 73.3% & specificity: 93.5%) demonstrated that such a public health approach would result in a significant benefit to the healthcare system of 1,421,000 euros (approx. US\$ 1,258,000). **The realisation of such a benefit is a result of early cancer detection, which leads to lower treatment costs, increased survival and longer productivity of the patient.** Partially supported by NIDCR/NIH grant K23 DE00420-01.

The role of the general dentist in the diagnosis of child abuse

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Nowadays child abuse is a serious social problem. It is a phenomenon that spreads fast, although evidence is difficult to reveal.

The term "child abuse" refers to the phenomenon according to which, one or more adults cause or allow others to cause either body damage or deprivation conditions to a child, in such a high degree that often severe disorders of physiological, mental, affective as well as social type or even death are brought about.

The aim of the current study is to present an overview of the latest epidemiological data regarding child abuse in Greece and abroad, to indicate the most prominent diagnostic criteria that will help dentists be more observant and finally to introduce general dentists to the legal knowledge they should share, in order to react in an effective way, when facing such episodes. As a servant of medical care provision, the dentist is responsible for a child's protection and safety.

We conclude that ignorance, or even more, the false belief that child abuse is a family matter, will not help relieve the child's torture.

Geriatric Oral Research

Programme of prevention for elderly institutionalised people

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The protocol was set up for 111 institutionalised patients in a long-term care hospital. The average age was 81,05 years and 75% were women. After having conducted an oral examination, the authors set up a program of prevention particularly adapted to people in institution. A set of categories was used to determine various protocols of care depending upon the state of the patient: patients with teeth, cooperative or not, edentulous patients, cooperative or not, those wearing a denture, as well as those at risk of problems in swallowing. This programme also had a double focus: new patients entering the service for whom a protocol was drawn up to provide a well-documented dental assessment, and the care-givers who benefited from a training in oral hygiene by referring dentists. After the establishment of protocols, an intermediate evaluation was conducted at 3 months to determine the impact of the project on the patients' level of hygiene and the degree of participation of the care-providing team. For that, each resident became the object of a clinical examination with recording of the hygiene index, compared with those observed routinely before the installation of the protocol. Comparison of hygiene levels before and after training showed significant differences in posterior teeth ($P=0.02$) and anterior teeth ($P=0.0004$). The practices of the care-providers were enhanced starting with the medical and nursing records of the patients, which allowed an evaluation of the actual involvement of these personnel and the difficulties encountered in putting such a programme into operation.

The relationship of oral impacts and clinical status in elderly people in Athens, Greece

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This study was designed to measure the prevalence of oral impacts and to investigate their relationship with clinical status in an elderly population in Athens, Greece. A cross-sectional survey of independently living adults aged 65 years or older was carried out in two municipalities in Athens. The sample consisted of 681 people. Oral health-related quality of life was assessed through a modified version of the Oral Impacts on Daily Performance (OIDP) indicator. Analysis was carried out separately for dentate and edentulous subjects and non-parametric tests (Mann-Whitney and Kruskal-Wallis) were used. 39.1% of dentate and 47.6% of edentulous participants experienced at least one oral impact affecting their daily life in the last 6 months. The most prevalent impact was difficulty in eating. Among dentate subjects, the OIDP score was significantly related to the number of teeth ($P=0.001$), filled teeth ($P=0.021$), anterior spaces ($P<0.000$), natural occluding pairs ($P<0.000$) and natural posterior occluding pairs ($P=0.003$). In the edentulous sample, the OIDP score related significantly to denture adaptation ($P<0.000$), retention ($P<0.000$) and extension problems ($P=0.004$). It could be concluded that the level of

oral impacts was considerably high in this population and that the number of teeth, the number of occluding pairs and the presence of anterior spaces in dentate and the quality characteristics of the dentures in edentulous people seem to relate to the ability of a person to eat, speak and perform the majority of functional tasks related to the mouth.

Oral health problems and needs in nursing home residents in Italy

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A survey was carried out to evaluate the oral health problems and needs of elderly residents in nursing homes. For this aim a special clinical chart with a questionnaire were arranged. The participants in the study were selected by the directors of nursing homes on the basis of cognitive status and willingness to be examined and interviewed. 116 collaborating people (91 women and 25 men) aged 55 to 99 years were visited in 4 nursing homes in the area of Ulss n 15 in the Veneto Region, Italy. Results of the dental screenings of these 116 people showed two main groups :edentulous 42 (36.2%) and dentate-with some natural teeth -74 (63.8%). Amongst the edentulous group 10 people (8.6% of the entire group) did not wear any kind of denture. In the dentate group 23 (31%) were edentulous in a jaw and 9 out of these did not wear denture. The greatest single need among dentate elderly was for routine oral hygiene (45%), while for denture wearers adjustment of loose dentures was the primary need (32%). Root caries were slightly more prevalent than periodontal problems (34% vs. 32% respectively) among dentate elderly. 75 out of 116 (64,6%) reported to be moderately satisfied of their oral situation. Anyway some form of oral health maintenance was needed for 90% of these nursing home residents. **These results suggest that daily oral hygiene and regular check-ups by a dental professional are most needed by frail elderly. Education of nursing home staff and the elderly themselves in the importance and methods of home care are also critical needs.**

Oral & Dental Hygiene

Non-carious dental lesions and oral hygiene

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The objective of the investigation was to study the prevalence of tooth grinding and erosion in the population of the Republic of Belorussia, as well as interrelation of these conditions with hygienic habits in the population. Altogether 1482 subjects (aged 17-65 years and over) were examined. During their examination the condition of dental hard tissues for diagnosing non-carious lesions along with oral hygiene by OHIS index (Green-Vermillon, 1964) were assessed. All subjects were questioned on various aspects of oral hygiene. Results: High prevalence of tooth grinding was revealed in all age groups. Tooth grinding and erosion prevalence tend to increase with age. The percentage of grinding at the age of 17 is 16% while in the age group of 35-44 it increases up to 40%. No tooth vestibular surface erosion was diagnosed in subjects aged 17, while in the age group of 35-44 it was 5.4%. In the studied subjects of 17-24 years of

age with good and satisfactory hygiene by DIS (OHIS-index component), the prevalence of wedge shaped deformation was 4.1 times higher than in subjects with poorer hygiene (DIS > 1.7), $P < 0.01$. In case of proper oral hygiene the risk of wedge shaped deformation appears to be higher with tooth brushing more than twice a day. Among 15 respondents (aged 17-24) who state they brush their teeth 3-4 times daily, tooth vestibular surface grinding was found in 4 subjects (26.7%). It is 2.4 times higher than tooth grinding prevalence in the entire age group. Wedge shaped deformation was revealed in 1 subject (6.67%) out of 15 that is 10-fold higher than 17-24 age group prevalence. **High prevalence of non-carious lesions in Belorussian population and their dependence on hygienic habits were confirmed.**

Evaluation of different reinforcements to increase the frequency of brushing behaviour in schoolchildren

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In communities where the establishment of oral care habits during primary socialisation does not succeed, schools may implement preventive programs during the secondary socialisation period. This study aims to determine effective reinforcement material to sustain brushing behaviour learned at school. Altogether 197 schoolchildren of 8- and 9-year-olds were first verbally instructed for brushing action mixed of Fones, Scrub and Roll methods followed by demonstration on models and in their mouth by leading their hands. When children learned to perform appropriate brushing and their knowledge increased; four test groups were designed: 1) reward for brushing performance in class, 2) disclosing solution after brushing, 3) repeated information by class teacher and 4) motivation of parents groups versus the control group and 5 weeks of experiment conducted at school. Pre- and post-PI and 5 times PHPI at weekly intervals were estimated. Statistical analysis was carried out using SPSS 10.0. For PI (before-after), Wilcoxon Matched-Pairs Signed-Ranks, Kruskal-Wallis One-Way Anova and Bonferroni adjusted Mann-Whitney U tests were used. For the 5 subsequently measured PHPI, Friedman One Way Anova, Wilcoxon Matched-Paris Signed-Ranks, Kruskall Wallis One-Way Anova, Bonferroni adjusted Mann-Whitney-U test were done. Results showed that the reinforcement groups performed better in routine brushing than the control group and regarding to intergroup performance reward and staining were the best methods and the parent motivation was least effective ($P < 0.001$). **It is concluded that reinforcements are needed to increase brushing frequency in primary schoolchildren.**

Periodontal Research: Diagnosis/Epidemiology

Radiological and morphological manifestations of inflammatory diseases in periapical dental tissues

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The aim of the study was to compare the radiological features of chronic apical periodontitis and radicular cyst with pathomorphological changes in periapical tissues. Material was obtained from 27 patients aged 20 to 80 years with chronic apical periodontitis and radicular cyst who had undergone cystectomy and resection of the dental root apex during the remission of the inflammatory process. Biopsy material was fixed in 10 % formalin. Histological sections were stained with hematoxylin -eosin and the method of fluorescent antibodies was used for detecting viral antigens. In 5 cases the diagnosis of chronic apical periodontitis was confirmed morphologically. The maximum focus of inflammation ranged from 3 to 7 mm in diameter. On histological examination biopsy material was presented as fibrous and maturing granulation tissue. Lumen signs and epithelial lining were not detected. Radicular cyst was diagnosed pathomorphologically in 22 cases. The maximum focus of inflammation ranged from 5 to 15 mm. When the size of the cyst exceeded 10 mm it enveloped the roots of 2 teeth. On histological examination the cyst wall was presented as fibrous and granulation tissues with diapedetic hematomas. Fragments of bone plates undergoing resorption were found outside the focus of inflammation. **Marked infiltration with segmentonuclear leukocytes was revealed in the granulation tissue included into the periapical formation in 4 cases.** It may be evidence of the persisting activity of an inflammatory process. The resolution of inflammation is probably hindered by the presence in epithelial cells of Type I *Herpes Simplex* virus or *Adenovirus* which were revealed by immunofluorescence technique.

Tobacco and oral health

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A clear association has been demonstrated between smoking and oral health condition. In Belorussia the prevalence of smokers is very high, even among young people. Therefore, a partial aim of a joint German-Belorussian project was to examine the influence of smoking behaviour on oral health among dental students. 1000 undergraduate students of Minsk Medical Institute were randomly selected to participate in a sociological and clinical-epidemiological survey. Participants were interviewed about their tobacco use. The oral examination based on the determination of the periodontal (CPI) and caries status (DMFT). Smoking frequency was divided into three categories: daily, sometimes, never. The Statistical Package for the Social Science Version 10.0 (SPSS) at a 95% confidence interval was used for statistical analysis. The results are based on the data of 839 subjects with a mean age of 18.7 years. According to them, 17.7% of the students smoked daily, 20.1% sometimes and 62.2% were non-smokers. The periodontal status showed for the majority reversible stages of periodontal diseases (CPI=1.8) with significant differences between daily smokers (CPI=1.92) and non-smokers (CPI=1,75). The caries experience was 3.5 DMFT (DT=0.4; FT=2.9; MT=0.1). Among smoking males the caries prevalence was higher (3.1 DMFT) than among non smoking males (2.4 DMFT). **In conclusion the results reflected a moderate oral health condition with significant correlation between the smoking frequency and the prevalence of caries and periodontal disease.**

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Bacteriological findings in diabetic patients (IDDM) with

intensified insulin substitution undergoing the longitudinal oral health intervention programme

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A group of 25 diabetics (IDDM) with the average age of 31 years and disease duration of 17 years on an intensified insulin substitution (insulin pump or repeated daily insulin dosages) was followed in the clinical trial lasting on the average 6 years. Patients were comprehensively orally examined, treated if necessary, regularly recalled and in every occasion instructed in the oral health performance. Following variables were recorded: DM duration time, treatment regime, glycaemia, HBA1, diabetes complications, DMFT, OHI-DI, CI, GI, PI, clinical attachment loss (CAL), oral microbiology. Results showed that the regular and comprehensive motivation of patients in the oral health performance with the regular maintenance periodontal care can improve oral hygiene and gingival health (DI baseline vs. final 0.40-0.16, GI baseline vs. final 0.23-0.17) however not to retard or stop the periodontal breakdown especially in molar regions (mean CAL baseline vs. final 1.01-2.45, molar region CAL baseline vs. final 1.39-3.82). This clinical experience was confirmed by the results of repeated bacteriological examinations. In clinically healthy localities the bacteriological pattern showed sequential reduction of „periodontal” organisms (*Fusobacterium*, *Veillonella*, *P. gingivalis*, *P. intermedia*, *A. a.*) while in periodontal pocket-associated localities the risk pattern lasted throughout the clinical trial irrespective of the improvement of oral hygiene and gingival health. Clinical and bacteriological parameters of periodontal status by the end of study, when compared with the baseline data, were distinctly better in IDDM patients who adhered to the time schedule of study and regularly passed through recalls, treatment, examinations and oral health performance interventions. Supported by the grant of the Czech Min. of Health no. 000237790.

Periodontal treatment needs in a group of mildly mentally impaired Greek schoolchildren

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The study aimed to assess the periodontal treatment needs and examine the impact of the oral health behavior on the periodontal condition in a group of mildly mentally impaired Greek schoolchildren. Little data exist on the factors influencing the periodontal condition of this group, in general, and specifically for Greece. Such data would allow the organisation of a preventive programme that would address not only caries but also periodontal health. The study sample consisted of 171 children (114 boys, 57 girls) with a mean age of 11.46 (SD: 1.92) years. Oral hygiene and gingival inflammation were recorded (PII-Silness & Loe, 1964 and Papillary Bleeding Index-Muhlemann, 1977, respectively). The periodontal treatment need was determined using the CPITN index (Ainamo et al., 1982). Multiple linear regression analysis examined the effect of the factors on the periodontal condition. The results showed that the PII was 1.00 (SD: 0.67). Only 45.47% of the tooth surfaces examined was found to be free of plaque. The value for the gingival inflammation was 0.47 (SD: 0.39). Scaling and root-planing were necessary (CPITN 3 and 4) for 41.5% of the schoolchildren, while 57.9% needed oral

hygiene instructions and/or supra-gingival scaling (CPITN 1 and 2). Only one child (0.6%) did not need any treatment (CPITN 0). The regression analysis showed that the frequency of brushing (negative effect) and the age of the first dental visit (positive effect) influenced significantly the plaque index. A strong positive effect of plaque was found for gingival inflammation ($P < 0.01$) and periodontal treatment need ($P = 0.02$). **The findings show that periodontal treatment needs are extremely high for mildly mentally impaired Greek schoolchildren. Oral health education should start at an early age and include emphasis on gingival health.** Supported by Unilever-Aim.

Epidemiology

Meta-analysis of reported performance in oral cancer/precancer screening

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Objective To conduct a meta-analysis of values reported in published reports for sensitivity and specificity in screening for oral cancer and precancer. **Method** A literature search, which included three databases, was conducted. Strict inclusion criteria were applied. Values for sensitivity (Sn) and specificity (Sp), from seven investigations, were expressed as a Receiver Operator Characteristic (ROC) curve. Meta-analysis of the combined results was used to produce a Summary Receiver Operator Characteristic (SROC) curve. **Results** The pooled weighted value of Sn from the seven studies was 0.796. From the SROC, the corresponding value of Sp at this level of Sn was 0.977 (95% CI 0.941, 0.991). When Sp was held at 0.977, the 95% CI for the corresponding value of Sn (0.796) was 0.594, 0.912. **Conclusions** The reports selected for eventual inclusion revealed a high level of heterogeneity with respect to the location of investigations, prevalence of lesions, the personnel used and other factors. Nevertheless, the meta-analysis indicated a generally high discriminatory ability in screening for oral cancer and precancer in the reported studies.

Oral health status of adults in Denmark

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Clinical-epidemiological data on oral health of the adult Danish population are limited. The objective of the present study was to provide for the analysis of the oral health profile of the adult population in Denmark and to assess the need for adjustment of the adult oral health care services. Stratified cluster sampling was used for selection of participants nationwide. A total of 1,115 individuals in the age groups 35-44 and 65-74 years were clinically examined. The response rate was 61%. Clinical examinations of dental status, dental caries and periodontal conditions were carried out by use of WHO criteria (1997). Frequency distributions and means were computed for data analysis. The 35-44 year-olds had a mean of 28.1 teeth present, 98.8% had 20+ teeth and no edentulous persons were found; the 65-74 year-olds had a mean of 16.4

teeth, 54.7% had 20+ teeth and 17.9% were edentulous. Among the 35-44 year-olds 1.4% were denture wearers against 57.4% of the 65-74 year-olds. The mean DMFT of the 35-44 year-olds was 16.7 (DT=0.5, MT=3.9, FT=12.3) and the 65-74 year-olds had a DMFT of 24.8 (DT=0.8, MT=12.0, FT=12.0). The D-component was higher for men ($P<0.05$) while the M-component was higher for women ($P<0.05$). Regarding periodontal conditions, 29.4% of 35-44 year-olds had shallow pockets and 6.3% had deep pockets whereas in the older age group 45.5% had shallow pockets and 20.0% had deep pockets. For irregular dental attenders the DT component ($D=1.2$) was more than twice the figure of regular dental attenders ($D=0.5$), however, the total DMFT for the two groups was similar. **The level of oral health and treatment need of adults indicate that reorientation of the oral health care system is required for curative as well as preventive services.** The study was supported by The Danish National Health Insurance.

Caries prevalence in Filipino children without access to conventional dental care

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The aim of this study was to determine the caries prevalence in 7 ($n=349$) and 10-year-old ($n=359$) Filipino children without any access to dental care in deprived rural communities in Northern Mindanao. Caries was recorded using WHO diagnostic criteria (1997) by two calibrated dentists. The percentage of children caries-free at age 7 and 10 was 7.5% and 16.9%, respectively. In 7-year-olds the caries level was 0.7 DMFT ((1.1) and 7.3 dmft ((4.9), which was concentrated in the D/d components. In 10-year-olds the DMFT was 1.9((2.8) and 2.4((2.7) dmft, exclusively concentrated in the D/d components. While the caries pattern in the younger children revealed that the caries burden was localised to the first molars (0.6 DMFT), more than one third of the caries attack in the 10-year-olds was in the upper and lower incisors and premolars. The caries prevalence and the pattern of the caries distribution suggests that the Filipino children are a high caries population. The high caries attack in the deciduous dentition was associated with severe carious in the permanent dentition. Because of the limited financial and personal resources, restorative treatment using ART was limited to permanent teeth. However, extraction of the carious deciduous teeth was the treatment of first choice. Invasive measures are prerequisites to control existing caries and pain. Only after doing that can primary preventive measures be effectively used. **In conclusion, there is a important need to develop evidence based guidelines for basic oral care in deprived communities.** Supported by Vivadent, Schaan, Liechtenstein.

Fissure sealing - overtreatment or preventive need?

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The aim of this longitudinal study was to assess detailed the status of pits and fissures in permanent molars to get information regarding their need of preventive care. 369 Westphalian children born in 1989 were examined as 8-year-olds (1997) and as 10-year-olds (1999). The surface-related caries status according the WHO criteria (1997) was completed by scoring non-cavitated carious lesions. Additionally, sealants in fissures and pits were recorded. A caries free

mixed dentition was found in 36% of the 8-year-olds and in 39% of the 10-year-olds, respectively. The caries experience was 2.4 dft/ 5.2 dfs/ 0.4 DMFT/ 0.5 DMFS at the age of eight and 1.5 dft/ 2.9 dfs/ 0.6 DMFT/ 0.9 DMFS at the age of ten. 0.3 DS were registered on the occlusal surface of first molars in 8-year-olds and 0.4 DS in 10-year-olds. 1.0 fissure sealants were scored in 8-year-olds and 1.4 in 10-year-olds. Sealed pits were rarely scored: 0.1 in 8-year-olds and 0.2 in 10-year-olds. The number of non-cavitated occlusal fissures raised from 0.8 in 8-year-olds to 1.4 in 10-year-olds. 0.7 initial carious pits were registered in 8-yr-olds and 1.0 lesions were found in 10-year-olds, respectively. **According to the increasing numbers of non-cavitated lesions sealant application should be used more frequently by German dental practitioners to prevent the carious onset in pits and fissures.**

Caries experience among pre-school children in Westfalia

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Oral health improvements in pre-school children have been reported (Marthaler TM. Caries Res 1990; 24:381-396) followed by first indication that the decline in caries levels in pre-school children came to a halt (Pitts NB, Palmer JD. Community Dent Health 1995; 12:52-58). The aim of this study was to evaluate the prevalence of dental caries in the deciduous dentition in 3- and 5-year-old children attending kindergarten schools in the EN-district, Westfalia in 2001. Results were compared with previous surveys of 1987 and 1997. Simulating the clinical procedures used in the national survey in Ireland (Stationary Office, Dublin, 1986) caries was diagnosed. The dmft was calculated (SAS database) and comparisons were made (Tukeys student range test; P value: 5%). In 2001 for 3-year-olds (n=255) a mean dmft of 0.53 (SD 1.80) was scored. In 1997 (n=165) and 1987 (n=287) mean dmft was 0.7 (SD 2.1) and 1.7 (SD 2.9), respectively. A caries decline occurred from baseline 1987 to 1997 significantly (P < 0.0001) but did not continue to 2001 (P=0.039). Percentage of caries free children increased from baseline 57.1% (1987) to 81% (1997) to 89% (2001). The present mean dmft in 5-year-olds (n=531) was 1.46 (SD 2.78). Between 1987 (n=683) and 1997 (n=531) the mean dmft of 3.0 (SD 3.5) decreased significantly to 1.8 dmft (SD 3.4). No further decrease was observed to 2001 (P < 0.0747). The percentage of caries free 5-year-olds increased from 38.9% (1987) to 64% (1997) and remained the same with 66% (2001). **While the period between the last two studies was short, the results could be the first indication that caries decline in these 3- and 5-year old children has ceased.**

Prevalence and distribution of cavited and noncavited caries lesions at 11 years old children

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The aim of the study was to determine the prevalence and the distribution of cavitated and noncavitated carious lesions to exhibit that when caries diagnosed solely at the cavitation level this will result in a significant underestimation of actual caries which might be especially important in epidemiological surveys. 510 children were examined by 3 calibrated dentists under blue-white colour light by plane mouth mirror and probe after children brushed and teeth were

dried with cotton rolls. Lesions were diagnosed and distinguished by visual and tactile criteria. Ten degrees were developed on the basis of information from the literature to diagnose as; 0: Sound; 1: Potentially carious (colored light or white change in side pits and fissures); 2: Inactive (intact surface); 3: Active (intact surface); 4: Inactive cavitated (up to 0.5 mm diameter); 5: Active cavitated (up to 0.5 mm diameter); 6: Inactive cavitated (larger than 0.5 mm diameter); 7: Active cavitated (larger than 0.5 mm diameter); 8: Filled (sound surface); 9: Filled with inactive caries; 10: Filled with active caries. The distribution of potentially carious lesions, noncavitated lesions and the cavitated ones were respectively 4.22%, 3.34%, 92.43% in deciduous teeth and 38.41%, 6.44%, 55.15% in permanent dentition. While cavitated lesions were significantly higher in deciduous teeth than in permanent ones, the higher percentage of cavitated lesions were active caries in both dentition with figure of 93%. **It is concluded that diagnosis of caries should be precisely made in regard to noncavitated lesions which might allow to design preventive programmes with remineralisation methods especially suitable for teenage groups.**

Treatment level and caries incidence in schoolchildren

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This retrospective study was designed to evaluate the results of dental screenings from 1996 to 1999. All examinations were carried out by one experience dentist of the Public Health Care. Caries data (dmft, DMFT) of 6 to 9 year old children (n=272), attending 6 primary schools in the urban region near Dresden, were recorded annually. All children got regular preventive dental care in their groups. Statistical evaluation was performed using t-test ($P < 0.05$). 107 (39.4%) of 272 children were without caries (dmft / DMFT=0) (group 1), 67 children (24.6%) had treated teeth (group 2) and 98 children (36.0%) had teeth with carious lesions (group 3). At baseline the dmft was 1.91 (2.18 (d=0.72 (1.33), the DMFT was 0.17 (0.58 (D=0.03 (0.19). After 3 years the caries incidence was 1.21 (1.65 dmft / DMFT; DMFT 0.49 (1.02. There were notable differences in the caries incidence between children with and without complete treatment. Caries increase in group 1 was lower (0.95) than in groups 2 (1.34) and 3 (1.41) ($P < 0.05$). After 2 and 3 years caries more increased in group 3 than in group 2 ($P < 0.05$). At the end of the study 87 children (32.0%) still had healthy teeth, 134 children (49.3%) had treated teeth, but 51 children (18.7%) children had carious lesions. Only 10% of children of group 1, but 19% of group 2 and 29% of group 3 needed dental treatment. **We conclude that regular and complete dental treatment in addition to preventive measures is a considerable factor to prevent or to reduce caries incidence in young schoolchildren.**

Caries prevalence of 11 year-olds between 1989 and 2001

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The aim of the study was to examine retrospectively the effects of the Primary Health Care system on the caries experience of 11-year-olds, during a period of 13 years. The sample consisted of all the 2,217 children attending a Public Health Centre (PHC) in a province of North-Eastern Greece. The prevention related factors associated with caries reduction, beyond early treatment with fillings, consisted of annual oral health education and the topical application

of fluoride to children at high-caries risk, while sealants were first introduced in 1995. The same dentist in the PHC carried out the examinations, during the regular routine visits of the school children. To analyse the dependent variable DMFT, the Poisson and the Binomial model were used (assumption of normality failed). In these models, the 3 factors tested, Time (13 examination years), Location of living (semi urban, rural highland and lowland) and Sealants applied (#0-16 per child, up to 94% of them) were highly statistically significant ($P < 0.001$). In the last 5 years the factor Location seems to affect only those with presence of caries (DMFT=1) and not the caries-free ones. Dental health was found to be good (DMFT=0) in increasing percentages year by year (range 12-50%). The DMFT index decreased constantly from 4.5(sd=3.16) (1989) to 1.81(sd=2.12) (2001). The SiC index for the 33% of children with the highest DMFT scores decreased dramatically (from 8.08 to 4.23). **In conclusion, the dental caries status of the 11-year-olds had vastly improved over the 13 years largely due to the expanding use of sealants.**

The effectiveness of a longitudinal oral health education programme in Flanders, Belgium

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The aim of this study was to evaluate the effect of a 6-year oral health promotion program for primary schoolchildren. This programme was part of the Signal-Tandmobiel® project, a longitudinal collaborative project combining the registration of oral health condition data and oral health promotion. The intervention group comprised 3,291 children with a mean age of 7.1 years at the start of the programme. These children received an oral health education programme, which consisted of a yearly one-hour lesson. Every year the children were examined clinically and a questionnaire, filled in by the parents, was administered to assess the oral health behavior. Data collected from a control group of 674 12-year-old children were included as reference. The representative samples were obtained using a technique of stratified cluster sampling. The mean DMFT/S values, although higher in the control group, were not significantly different in the participating children and the controls. The frequency of brushing was the same in both the intervention and the control group. Significant difference in favour of the intervention group was found in the number of between meal snacks and the proper use of topical fluorides ($P < 0.001$). Children in the control group showed significantly lower proportion of filled teeth than those in the intervention group ($P < 0.05$), with a care index of 73% versus 80%. In conclusion, the implemented yearly school-based oral health education program did not result in significant reduction of the caries prevalence measured. The program has been effective in improving the oral health behaviour and in stimulating dental attendance, resulting in a higher care index.

Prevalence of developmental defects in enamel in a young population of Paços de Ferreira, Portugal

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The aim of this study was to determine the prevalence of developmental defects in dental enamel in a young population of Paços de Ferreira district in the North of Portugal and the possible relation with the medical history. The data were collected using the examination criteria of the modified DDE index, and a questionnaire was used for the subjects or for the parents for determination of medical history and habits. The sample (n=132) with an age between 12 and 17 years (mean 15.2); 54.5% being girls. Results: The prevalence of defects was 36.4% and the most prevalent teeth effected were the incisors, 33.3% of the sample had demarcated opacities, 29.2% had diffuse opacities and 20.8% had enamel hypoplasia. The odds ratio were significant for the history of received medication for the colic or the otolaryngological problems: 3.60 (1.70;7.61) or for the fluoride supplement intake 2.50 (1.03;6.05), but not for the trauma or for the other conditions.

The monitoring of enamel defects has an important role in public health by the prevention of undesirable changes in tooth appearance. Defects of tooth enamel are still prevalent between young people especially those with history of infection in infancy.

Does a regular pattern of dental attendance prevent children from a low socio-economic background having dental pain?

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There was a significant reduction in dental caries in Brazilian schoolchildren in the last decade. However, this reduction was not the same for all groups and little is know about the impact of dental problems on the daily life activities in the young population. The aim of this study was to report the prevalence and characteristics of dental pain in schoolchildren related to socio-demographic variables. A cross-sectional survey involving 1,052 out of 1,200 (87.6%) 15-year-old adolescents enrolled in private and public schools in the urban area of Recife-PE Brazil was carried out. The prevalence of dental pain was recorded using standard measures recommended for this age group (Melzack, 1992; Sherphed, 1995; McGrath; 1996).The children were examined, interviewed and answered a self-complete questionnaire. Data analysis included bivariate analysis followed by multiple logistic and ordinal polytomous regression The overall prevalence of toothache in the last six months was 33%. It was found a statistically significant interaction between pattern of dental attendance and socio-economic position ($P < 0.1$). Schoolchildren from low socio-economic background who attend the dentist regularly reported more dental pain (OR=1.9 95% CI=1.3, 2.9, $P < 0.001$) more dental pain than their counterparts from high socio-economic background after adjusting for other variables. The prevalence of dental pain in Recife was high. The results indicated that conventional dental services and strategies are not coping adequately with urgent dental needs. **In conclusion, the high rates of dental pain in children who attend the dentist regularly is a strong indication of the need for oral health promotion.** This project was supported by CAPES.

Caries Prevention

Reported toothbrushing and mean DMFT in adolescent

children in Europe

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Objective To assess any relationship between reported tooth-brushing in adolescents and DMFT of 12-year-old children across Europe. **Background** Toothbrushing with fluoride toothpaste is a strong risk factor negatively associated with dental health when viewed on an individual or group basis. This study assessed that association across the continent of Europe at a National level. **Methods** Mean DMFT of 12-year-olds from the WHO database and reported toothbrushing by adolescents in the Health Behaviours in School Children survey, were collected for European countries. Spearman's correlation coefficients were calculated using the two variables. **Results** There was over a four-fold variation in mean DMFT. The reported prevalence of brushing more than once a day varied from 63% to 88% in 15-year-old females. There was a strong, negative, statistically significant association between reported toothbrushing more than once a day and DMFT (Spearman's $\rho = -0.88$, $P < 0.01$, $N = 10$). Results for available age/gender groups showed weaker correlations with similar statistical significance. **Conclusions** The significant association between reported toothbrushing and DMFT is consistent with previous research and is likely to be causal. Reported use of fluoride toothpaste has a consistent effect in reducing dental caries across Europe using national data. **This study confirms that national reported toothbrushing habits are strongly associated with lower national levels of tooth decay across European Countries.**

Caries preventive interventions in Filipino children - Results after three years

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This study was designed to evaluate the effectiveness of a WHO-supervised school based preventive programme for Filipino children. 19 primary schools in deprived communities of rural areas in Northern Mindanao had been selected to take part in the programme. By using WHO criteria (1997) one dentist examined 1,574 children with an mean age of 7.1 years. The percentage of caries free children was 8.8%. Caries levels were 1.2 DMFT ((1.4) and 7.2 dmft ((5.1). Fillings were not present in either dentition. The mt value was 0.2 (+ 0.7). The preventive programme focused on preventive (dietary control, supervised toothbrushing with a fluoridated toothpaste, professional application of fluoride varnish). In order to cope with the high treatment need invasive measures (extractions of deciduous teeth, ART-fillings in permanent teeth) were included. 1,162 children with a mean age of 10.2 years were re-examined after three years of the programme. The percentage of caries free children was 16.2. Caries levels were 1.6 DMFT ((1.8); 0.5 DT, 0.2 MT and 0.9 FT. The increment of 0.4 DMFT and the distribution of the DMFT components in high caries risk Filipino children reflects the effectiveness of a comprehensive dental care approach. Extractions of carious deciduous teeth and ART-restorations in permanent teeth might have an important impact by reducing the microbial infection levels in the oral cavity. **We conclude that invasive measures seem to be a prerequisite for the caries preventive effect of daily toothbrushing with fluoridated toothpaste in children with high caries experience, particularly in the mixed dentition.** (Supported by Vivadent, Schaan, Liechtenstein).

Factors influencing infant feeding practices potentially detrimental to oral health

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Background Sugar rich drinks are a recognised risk factor in early childhood caries. Currently, in depth knowledge of factors influencing mother's choice for feeding bottles and cups is incomplete. **Objectives** This study investigated parents and carers knowledge of feeding practices potentially detrimental to oral health; barriers to adopting safe feeding practices; and commercial factors influencing feeding bottle and cup contents. **Methodology** A qualitative approach using semi-structured interviews was employed. Interviews were conducted by an experienced researcher and tape recorded. Following full transcription, emerging themes were identified, systematically explored and validated within the verbatim accounts. 33 parents/carers of children aged < 3 yrs, resident in areas of high caries prevalence were involved. **Results** Overall knowledge of the prolonged effect of exposure to sugar drinks in feeding bottles and cups was poor. Greater concern was expressed over the use of bottles on the development of the occlusion. Milk was viewed as a food rather than as a drink. Many barriers to giving water were described: children reject it; mothers don't like it; it was 'cruel' to offer water instead of sweet drinks; water in feeding bottles or cups was seen as a sign of poverty. Commercial influences on choices were strong. Products offered by baby food manufacturers were viewed as safe, but a recently marketed "Toothsafe" drink was viewed with suspicion. **Conclusions** **There are significant barriers to adopting the traditional oral health education message that only milk and water are truly safe for teeth.** The support of Cardiff Sure Start is acknowledged gratefully.

Toothpastes for children in the Czech market network; fluorides, labelling and customers information

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Early onset of oral hygiene practices in children belongs to the decisive items in primary prevention of dental caries. The employment of appropriate fluoride toothpastes is of utmost importance both for effective prevention and for safe topical fluoride application. Labelling of toothpastes and customers information on covers are thus critical for their correct choice and usage. The survey of brands of toothpastes designated for children was conducted in the Czech market with the aim to determine to what extent their labelling and cover information adhered to the EN ISO 11 609 and to the recommendations of the European Academy of Paediatric Dentistry (EAPD) (Oulis J.C. et al., Eur.J.Paed.Dent., 2000; 1:7-12). Altogether 32 brands of child toothpastes were evaluated. Labelling and cover information of 30 of them adhered to the EN ISO 11 609 (fluoride component alleged), 2 brands were signed only to contain 'active fluoride'. With regard to the EAPD recommendations for child toothpastes labelling (appropriate child age, marked fluoride content, pea size dose to toothbrush recommendation, not to swallow warning) only 2 brands were found to carry optimal information. Picture design of covers mostly did not correspond to the age of child for which the respective brand of toothpaste would be

advisable. The labelling and cover information of the assortment of child toothpastes in the Czech market, even if largely adhering to the EN ISO 11 609, were found to bear insufficient information for customers for correct choice and appropriate usage. This study was supported by the institutional grant of Ministry of Health Czech Rep. No. 0002377901.

National programme for caries prevention in Romanian schoolchildren

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This paper aims to point out the contribution of Preventive and Community Dentistry Discipline, Faculty of Dentistry - Iasi, Romania, in initiating a caries preventive program for children in grades I - IV, in five cities (Iasi, Bucharest, Tg. Mures, Constanta, Timisoara). In 1992, in collaboration with WHO regional center we performed an epidemiological study concerning the oral health status in 345 children aged 12 and 342 children aged 6, using the Danish recording form. Mean values for DMFS in 12 year olds were found to be 6.3 (SE=0.3) and for defs in 6 year olds were 8.5 (SE=0.6). Data were managed using Statistical Analysis System (SAS) for computers. A total of 200 6 year old children were introduced in a comparative study concerning the efficacy of local fluoridation using NaF 0.2% solution once a week. After six years results showed statistically significant reductions in DMFS index in the test group comparing to control group. The SPSS 8.0 for Windows statistical software was used for data management and statistical tests. As a result, in 1999 the decision makers in public health approved and financed for the entire children population in I - IV grades, in the five cities mentioned before, a caries prevention program based on mouth rinsing with NaF 0.2% solution, once a week. After three years, a total of 12,204 children in I - IV grades from Iasi are continuing the prevention program, corresponding to a response rate of 97.9%. It can be concluded that in Iasi the Caries Preventive Programme is a success.

Other

Guidelines for the treatment of dental patient with disabilities in the surgical section

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The aim of the study is to define the guidelines for hospital based clinical management of patients with disabilities in the peculiar moment of the dental treatment under general anaesthesia. The purpose was to reduce level of anxiety of the patient and health professionals. Methods: Family questionnaires were used for data collection. Our guidelines concern a clinical pathway, and the patient is always with a member of the family or a devoted caretaker. The day before the treatment, the first contact between the patient, the family and the dental team takes place. This is an extremely important step, when the patient meets the operators and starts

making their faces and voices familiar, the parents are explained, how the transport from the dental surgical ward to the surgical section will be arranged. The day of the treatment the patient, the parent and a member of the dental surgical team go together to the pre-anaesthesia area, where the pre-anaesthetic assessment starts and the venous access is created. The patient, slightly sedated, is moved to the surgical area and only at this point the parent retires. Conclusion: **Following this protocol the disabled patient arrives at the moment of the anaesthesia with a diminished level of anxiety and the physical immobilization is not necessary; operators' apprehension decreases too. This innovative care pathway achieved an excellent compliance of the patients with disabilities.**

Prevalence of candidosis among hospitalised patients in long-term care facility

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The study was carried out on 110 patients, older than 65 years, hospitalised longer than 48 hours, in a long-term care facility. The average age was 80.52 years and 73.63% were women. The aim of the study was to determine the prevalence of candidosis, defined by the association of clinical warning signs and of a positive fungus diagnosis defined by the presence of yeasts in a direct examination and a positive culture from a specific location. A complementary study was conducted on the statistical link between candidosis and known geriatric risk factors: wearing a denture, antibiotic treatment in the month preceding the examination. Altogether 91 patients had clinical oral examination; 17 refused the clinical examination; 3 refused the clinical and fungal examinations and 2 patients were absent. The prevalence of candidosis was 15.38%. The organisms recovered were *Candida Albicans* (57.1%), *Candida Albicans* in association with *Candida Glabrata* (21.4%), *Candida Glabrata* (14.3%), and in one case there was an association of *Candida Albicans* and *Candida Tropicalis*. 5 out of 19 patients wearing a denture had candidosis (26.3%). 4 out of 13 who had received antibiotic treatment during the preceding month presented candidosis (30.8). Of the 14 patients who refused the clinical examination: 5 had a positive direct examination and a positive culture (35.7%) determining the prevalence of candidosis (17.6%). 5 patients (6.5%) had a negative clinical examination, but positive direct and culture examinations. High prevalence of candidosis observed in this study would require preventive measures among hospitalised patients.

Inequalities in private dental expenditure in Greece: Comparison between 1987 and 1998

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In Greece more than 90% of dentists practice privately and this reflects the fact that more than 1/3 of the total private health expenditure is given to oral health by family budgets. The purpose of this study was to compare private dental health consumption expenditure between the years 1987 and 1998, and to present some evidence (a) on the overall change and trends and (b) on

regional- and income-related differentiations. Primary data were derived from the Statistical Service of Greece and National Household Accounts. The analysis of the data revealed, among others, the following: 1. In 1998 private dental health consumption expenditure at constant prices, increased by 20.4% in comparison to 1987, while it presented a slight decrease as percentage of the total private health consumption expenditure (36.7% in 1987 and 34% in 1998). 2. In both years, the largest amount of the total dental health consumption expenditure per capita is observed in urban areas and in 1998 it presented a further increase by 27.2%, while in semi-urban and rural areas it was decreased (by 30.8% and 16.6% respectively). 3. The total annual consumption expenditure per capita is distributed according to monthly income of the population, but in 1998 these differences were more pronounced and higher income groups presented an increase of 73.5%, while low-income groups presented a decrease of 64.1%).

Oral health and dental problems in a group of deaf students

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Purpose The aim of the present study was to determine the caries experience and the therapeutic needs of a group of deaf students, to set baseline data and to determine their treatment need. **Introduction** Hearing deficits in childhood can result in lifelong impairments in receptive and expressive language skills. About 1/1000 newborns have severe to profound hearing loss at birth and another 3/1000 children acquire moderate to severe hearing loss during childhood. People with a sensory impairment are entitled to equal standards of health and care as their able bodied cohorts. **Material and method** The sample consisted of 21 deaf adolescents aged 12-17 years. All were students in a special needs school in the region of the city of "Serres" - Greece. A matched control group of 21 healthy students of the same age and from the same region attending public schools has been used in order to compare the findings. **Results** Similar dental caries experience existed in the two groups. The deaf population observed in this study exhibited a relatively higher amount of plaque. The mean DMF(T) value of the deaf group reached the score of 3.91. Oral Hygiene Index - Simplified (OHI-S) was considered high in both groups. Treatment needs index for the deaf children was estimated within the range of 79 to 100%. **Conclusions** **The findings indicate no great differences in the oral status between the hearing impaired and the healthy students. A greater percentage of the deaf children require immediate dental treatment due to poor oral hygiene and gingival health. Preventive dental intervention programs should never exclude these population groups with the excuse of serious communication problems.**

Lavrion silver and lead mines and oral health status

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The purpose of this study is to evaluate the impact of lead mines in the oral health status of the population of Lavrion (Attica). The principal lead ore of the area is mainly galena followed by PbS, and this is usually associated with the sulfides of silver, copper, arsenic, bismuth and tin. Other common ores of lead are cerussite, PbCO₃ and anglesite, PbSO₄. Lavrion has been famous for its silver and lead mines and had contributed to the economy of Ancient Athens

mainly since the beginning of the 5th century BC. It is also well known that the people in Lavrion have "colored teeth" due to fluorosis and the DMF index is lower than other places in Greece because of the fluoridated rocks and minerals of the area. Lead poisoning may occur in industry workers and the inhabitants of the area. The toxic effects of lead were familiar to Greek and Romans. Hippocrates (370 BC) described a severe attack of colic in a man who extracted metals, and was probably the first to recognise lead as the cause of the symptoms. **Material and method** The results of 14 epidemiological studies (1940-2002) and historical data are analysed and presented. Four studies took place during the years 1940-1965 and ten during the years 1987-2002 - in school children, adults, and industrial workers. **Results:** Caries index is significant lower in the area and fluorosis index (Dean 1942) is recorded. Fluorosis is present in about 70% of the adult population; recent data show absence of fluorosis in children less than 16 years old. **Conclusion** Fluorosis, blue line, and low caries index are presented because they are in correlation with the mines, rocks and minerals of the area of Lavrion. This study is dedicated to the pioneer scientists in Greece and abroad for their efforts and studies.

Athens 2004. The challenges for Public Health

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The aim of the study is to focus on the medical planning for the Athens 2004 Olympic and Paralympic Games through the experience of the previous events in Atlanta 1996 and Sydney 2000 Summer Olympics and Winter Olympics in Salt Lake 2002. Planning for Olympic Games is in one sense unique. It involves deploying resources (human, logistic and material) on a scale almost unprecedented in peacetime. (Stiel D, Trethowan P, Vance N, MJA 1997; **167**:593). It is essential to realise that the public health experience during the Games in other cities, and the lessons learnt should be useful in planning for such a major event in Athens 2004. Effective mechanisms to protect and monitor athletes, visitors and citizens should be operating during the Games. The public health preparations should focus not only on the medical emergencies, trauma or communicable disease surveillance but also on other aspects i.e. co-ordination of a big number of volunteers with the ability and the experience to handle cases with multinational patients. The facilities of such medical centers should be planned to be adequate to handle a big number of cases and to ease the operational and administration processes. The health and welfare of the participating sportsmen and women is paramount for successful competition and this must include oral health. (Soler B, Batchelor PA, Sheiham A, Int. Dent J 1994; **44**:44-48). The planning, the strategy and the operational aspects of public health programs, emergency medical care and disaster preparedness in Athens will help not only in the organisational challenges but also in the enhancement of Public Health in Greece.

Adaptation of young and adolescents to lingual orthodontic treatment

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The objective of this study is the comparison between adolescents and adults adaptation to lingual orthodontic treatment. Lingual orthodontic treatment is being practiced since the eighties but the patients were exclusively adults. The aspect was that adolescents would have tongue

irritation, speech problems and bad oral hygiene. Lately, that opinion has proved wrong and the fact is that most of the adolescents have a satisfied, if not excellent, adaptation to lingual orthodontic treatment. That fact came of a questionnaire, which was filled in by 25 adolescents (13-18 years old) and 35 adults (19-57 years old). All of them were under orthodontic treatment with lingual brackets and they were examined once a month during their orthodontic treatment. All that lingual orthodontic treatments lasted approximately two years. The results of the study proved that adolescents had less problems than adults. Actually, adolescents could adjust their speech to the new condition in an extremely short period of time, contrary to adults that managed to adjust their speech after a day or more. Additionally, after frequent clinical inspections to all the patients, the conclusion was that adolescents had less tongue irritation problems than adults. On the other hand, there was no significant differences between adolescents and adults' oral hygiene. The conclusion is that there is no limitation to adolescents to take an orthodontic treatment with lingual brackets. The benefits of lingual orthodontic treatment to a young person is a great smile with no visible brackets and great self-confidence.

Oral microbial profile in head - neck cancer patients receiving xerostomia producing radiotherapy

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This study was performed to assess the effects of radiation-induced xerostomia on the composition of the oral microflora in 10 head-neck cancer patients. Unstimulated mixed saliva samples were taken from all patients three times in a four week period, before irradiation (baseline - week 0) and at 2nd and 4th week. Whole saliva flow rates were determined by the method of Bucher *et al.* (1988). Samples of mixed saliva were collected for microbiological analysis. The saliva samples were diluted and appropriate dilutions were spread on plates with non selective and selective media. The plates were incubated in the appropriate atmospheres. Identification of bacteria were performed to genus and species level. After identification the relative number of individual bacterial species were calculated. **Results** The mean unstimulated salivary flow rate fell from 0.51 ml/min before treatment, to 0.22 ml/min and 0.09 ml/min after treatment. The total cfu/ml in all samples were relatively unchanged while qualitative changes were detected. Microorganisms isolated at the base line were almost similar to that of the normal oral flora. In the 2nd week, pronounced changes in the percentages and in the isolation frequencies were found towards a highly acidogenic flora (*A. odontolyticus*, *Lactobacilli* spp., *S. mutans*), while beneficial microflora, such as *Veillonella* spp., *Neisseria* spp.etc, was observed as well. Furthermore, exogenous flora was detected. Much higher concentrations were observed in the third sampling period (W 4) concerning the cariogenic as well as the exogenous flora. It is concluded that an oral health preventive program towards the acidogenic and exogenous flora should be applied to these patients.

Soft-tissue tumors of the mouth at a Hospital Dental Department

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This study aimed to analyse the cases with soft-tissue tumors of the mouth presented at the Dental Department of a General Hospital in Greece. **Material and methods** For this purpose the patient records of this Department were analysed over the recent 9-year-period starting from 1/4/1993, when the Stomatological Clinics of this Department started to accept patients officially. This study included only cases with tumors and tumor-like lesions presented either as emergency cases or after a fixed appointment and examined by the same dentist, who had trained in Stomatology. Cases with epulis fissuratum and cyst of eruption were excluded. Altogether 176 cases were included. **Results** The analysis showed that such tumours were more common in women (60%) than among men (40%) and in persons over 40 years old (64%). The analysis of 85 out of these tumors in which a biopsy was performed showed the following: 1. The lower lip was the site of predilection (25%). 2. The majority of these tumours were small, up to one cm (85%). 3. The histological examination showed that most of them (97.6%) were benign with irritation fibromas being the commonest ones (40%), followed by pyogenic granulomas and mucoceles. Only half (47%) of the patients presented within the first year after they had noticed the existence of the tumour. **We conclude that most of the soft-tissue tumours of the mouth are benign. However, histological examination is necessary for the final diagnosis.**