

ABSTRACTS from 4th EADPH Congress

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The fourth congress of the European Association of Dental Public Health, EADPH, was held in Cork, Ireland on September 14th and 15th. The Co-president of the congress was Professor Denis O'Mullane. The abstracts were refereed by the scientific committee consisting of

- Professor Gert-Jan Truin, Nijmegen, The Netherlands
- Professor Denis O'Mullane, Cork, Ireland
- Dr. Roberto Ferro (president), Cittadella, Italy

Abstracts

Behavioural sciences/health services research

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|--------|---|
| Title | Perceived oral health and need for care among Finnish adults |
| 1 | A HIIRI*1, E WIDSTRÖM1, E HONKALA2. |
| Author | 1 National Research and Development Centre for Welfare and Health, Finland, 2 Kuwait University, Faculty of Dentistry |

As adults retain more teeth, it might be expected that the need for dental care would increase. The objective of this study was to investigate, using a structured questionnaire, perceived oral health and need for treatment among a group of Finnish middle-aged adults who were not eligible for dental insurance benefits. A random sample of 50-year-olds living in the Helsinki, Vantaa and Espoo metropolitan area was selected for the study. The response rate was 73%. Most of the subjects had retained more than half their natural teeth and only 2% of them were totally edentulous. Almost half of the subjects evaluated their dental status as good or very good, 43% felt it was moderate and 12% said poor or very poor. About half of the subjects thought they needed dental care at the time of the study and about the same proportion had had dental discomfort during the last two years. The higher the educational level, the better respondents believed their dental status to be ($P < 0.05$), the more remaining teeth they had ($P < 0.05$) and the less they perceived themselves to need dental care ($P < 0.001$). Perceived dental status was correlated with the need for dental care: all of those who evaluated their dental status to be very poor and 11% of those who evaluated their dental status to be very good felt they needed dental care. It can be concluded, that awareness of dental health was good in this group and participants' needs for care were being met. These subjects were more highly educated and had higher incomes than Finnish adults on average. The study was supported by the Finnish Ministry of Health and Social Affairs.

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| Title | Identifying high prevalence populations by area measures of socio-economic status |
| 2 | M TICKLE*, A S BLINKHORN. |

Author

Manchester Health Authority, Manchester University Dental School,
UK

The objective of the study was to compare the ability of different geodemographic classifications and deprivation indicators to segment a population of 5-year-old children according to disease prevalence. Commerce uses geodemographic indicators to identify and target specific groups, this approach has obvious implications to detect groups with high levels of dental disease. The study population was all 5-year-old children living in 7 districts in the North West Region of England (N=15,747). This population was segmented according to caries prevalence by using Super Profiles and the ONS geodemographic classifications, Jarman and Townsend (at ward and ED level) deprivation indices, the single Census variables of unemployment and % of households without a car, and also the schools that the children attended. Market penetration analyses and Lorenz curves were used. All of the indicators provided very similar results, large differences were detected between deprived area types at the top and affluent at the bottom of the market penetration rankings. Differences ranged from 42.5% for the ONS geodemographic classification to 31.4% for the Townsend index at ED-level. However, for every indicator, the fall between these two extremes was very gradual. Each indicator could identify approximately 30 percent of those with disease in the most deprived quartile of the population. The effectiveness of the indicators as measured by the Lorenz curves ranged from 8.3 to 10.5%. When analysis was restricted to those children with severe disease (dmft>5) a similar picture was found. Although there are large differences in prevalence between deprived and affluent areas, there is a gradual fall between the two extremes. This gradual fall has major implications for public health strategies to reduce dental disease.

Title

The relationship between dental caries, dental service use and deprivation

3

Author

A S BLINKHORN*, M TICKLE, G MOULDING, K M MILSOM.

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The study was carried out to measure the relationship between tooth decay, contact with dental services and deprivation at UK electoral ward level. Understanding the relationship between use of dental services and dental disease is important, as regular attendance at a dentist is advocated to promote oral health. The study population included all children less than 6 years who were resident in Ellesmere Port in the North West of England. All children who were registered with the General Dental Service (GDS) and those using the Community Dental Service (CDS) were matched against the Health Authority population register to identify the unregistered residents. Rates for children aged 3-5 years 'in contact' with primary dental care services, whether CDS or GDS, were calculated at ward level. One calibrated examiner examined all 5-year-old children in Ellesmere Port and dmft scores were calculated at ward level. Ward deprivation was measured using the Jarman index. Bivariate linear regressions at ward level were performed in turn between: dmft and Jarman score; rates for 3-5-year-olds in contact with dental services and Jarman score; and dmft and rates for 3-5-year-olds in contact with dental services. Significant linear relationships were observed between dmft and Jarman score ($P<0.05$, $R^2=0.43$). Significant inverse relationships were found between rates for 3-5-year-olds in contact with dental services and Jarman score ($P<0.0001$, $R^2=0.78$), and also dmft and rates for 3-5-year-olds in contact with dental services ($P<0.005$, $R^2=0.65$). At a small area level dental disease has a strong inverse relationship with dental services use. The reasons for this relationship should be investigated in order to establish an evidence-base for the advocacy of regular dental attendance.

Title **Factors related to missed appointments among Finnish pre-school children**
4 Author S LAHTI*, H HAUSEN, S KÄRKKÄINEN, L SEPPÄ.
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Our aim was to explore the factors related to missed appointments among preschool children. In Finland, children under 19 years of age are covered by comprehensive oral health care services that are provided free of charge. However, 6-8% of pre-school children have missed appointments (Heinikainen M, Murtomaa M. Finnish Dent. J. 1999; 9: 470-473). Independent random samples of all children aged 3 and 6 years were drawn from Kuopio and Jyväskylä in 1992 and 1995. Total numbers of children examined were 424 (3 yrs) and 434 (6 yrs). Caries was registered clinically and radiographically by calibrated dentists and background information was obtained by questionnaires. Information about missed appointments during 3 years preceding the examinations in 1992 and 1995 were obtained from personal dental records. Children with complete data (668) were included in the final analysis. Factors related to missed appointments (none/one or more) were explored by means of logistic regression analysis. Independent variables were: dmft ($0/^{31}$), father's education (elementary/high school or more), mother's education (elementary/high school or more), family's annual gross income (£ 25,000 EUR/>25,000 EUR), intake frequency of sugary items (many times a day/less often), brushing frequency (twice a day or more/once a day or less) and sex (female/male). The factors significantly associated with more missed appointments were: dmft (OR=4.0, 95% CI=1.9-8.1, $P<.001$) and brushing frequency (OR=3.8, 95% CI=1.1-12.0, $P=.031$). Children who were not caries free and who had less favourable home care habits were more likely to have missed appointments. This study was supported by the Academy of Finland and the Yrjö Jahansson Foundation.

Title **The effectiveness of a school dental screening programme in Northern Ireland**
5 Author M DONALDSON *, M KINIRONS.
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School of Dentistry, Queen's University, Belfast

The objective of the study was to evaluate the effectiveness of school dental screening in promoting dental attendance among children with a treatment need and to examine the relative importance of screening, social class and other factors in dental attendance. The school dental screening programme has been in existence for over 90 years yet its value in encouraging attendance among children with a dental health need is not fully established. Sixty-two participating schools were assigned to study and control groups using a stratified, blocked randomisation technique. The study group children received the standard school dental screening and the dental attendance of those with a positive screening result was assessed after 2 months by means of a questionnaire issued to the children's parents. The control group children were not, at this stage, screened yet their parents received the same questionnaire assessing dental attendance over the 2-month period. Two thousand five hundred and fifteen children were screened with 980 (39%) having a positive result. Six hundred and sixty four completed questionnaires were returned giving a response rate of 67.8%. Dental attendance was reported among 45.5% of the study group ($n=352$) in the 2 months following screening. In the same period 27.6% of the control group ($n=312$) claimed attendance ($P<0.001$). The effect was found to be significant among the high employed group ($P<0.01$) and the unemployed group ($P<0.05$). School dental screening is effective in promoting dental attendance. The strong effect among the lowest socio-economic group shows that school dental screening may be used to decrease dental health inequalities. The research was funded through the DHSS postgraduate studentship awards.

Title **Determinants of adolescents' reported snack consumption: the role of demography, knowledge and attitudes in Belfast and Helsinki**

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Author R FREEMAN*, H HEIMONEN, P SPEED, H TUUTTI.
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The objective of the study was to investigate demography, health knowledge and attitudes as determinants of reported snack consumption in adolescents residing in Belfast, Northern Ireland and Helsinki, Finland. Ten percent random samples of 14 to 15 year old Belfast (n=628) and Helsinki (n=600) adolescents were obtained. A questionnaire assessed demography, dental health knowledge, attitudes and the consumption of snacks containing non-milk extrinsic sugars (NMES). Five hundred and eighty-nine questionnaires were returned in Belfast and 441 questionnaires in Helsinki. Belfast adolescents had significantly higher levels of dental health knowledge and higher consumption rates for snacks containing NMES but lower levels of dental health attitudes. The Helsinki adolescents had more positive attitudes towards teeth and gums, self-reliance and health-related attitude. Multivariate analysis showed that Belfast males, from unemployed families who had poorer opinions of their oral health had higher reported consumption of NMES snacks. The findings of this study suggested that the acquisition of dental health knowledge played little part as a determinant of snack consumption. The more important predictors were demographic. There is a need to develop healthy public policies to promote oral health to minimise the demographic influences upon snack consumption and reduce oral health inequalities.

Title **Implementation of fluoride programmes at Finnish schools in 1981 and in 1997**

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Author S HONKALA*, E HONKALA, A RIMPELÄ.
Faculty of Dentistry, Kuwait University, Kuwait, School of Public Health, University of Tampere, Finland

This study was a part of nation-wide research programme, the Adolescents Health and Lifestyle Survey, which has been conducted in Finland since 1977. It is based on standardised questionnaires, mailed to 12-18-year-old Finns every second year. In 1981 and in 1997, we studied the implementation of professionally practiced fluoride (rinsing or gel brushing) programmes at school classes among 12-year-old school children (n=1864). In late 1970's and early 1980's school based fluoride programme was one important part of caries prevention in Finland. While the dental health of children has improved drastically during the last decades, some prevention methods have been reduced or changed. The aim of this study was to find out if school fluoride programmes were still implemented. In 1981, 79% of 12-year-olds reported that they had rinsed at school or 45% brushed with fluoride gel. In 1997, the respective figures were only 16% and 27%. In 1981, boys reported having brushed with fluoride gel more often than girls (P=0.016). Those who performed well at school less often gel brushing than the others (P=0.017). These differences did not exist any more in 1997. There were no differences in rinsing in neither of these years. In 1981, almost all (94%) of studied children took part in fluoride mouth rinsing in big cities (P=0.000), but in 1997 only 18% (P=0.001). In capital the respective figures were 70% and 6%, and in rural areas 74% and 19%. Gel was most commonly used in capital area in 1981 (67%; P=0.000) and then least commonly in 1997 (11%; P=0.000). In rural area still 1/3 of children reported having fluoride gel programme at school in 1997. Even though school-based fluoride programmes have been clearly reduced in Finland, they are still implemented in rural areas.

Title **Oral care in residential and nursing homes in Kent**
8 Author V E HARRISON*, M G BARKER, C D ALLEN.
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Aylesford, Kent, UK

The aim of the present study was to investigate the availability of dental treatment and the provision of daily oral care in residential and nursing homes in Kent. Half of the population in Britain aged 65 years and over are dentate and among these higher levels of oral disease have been demonstrated in those people living in institutionalised care than those living at home. (National Diet and Nutrition Survey: people aged 65 and over. Report of the Oral Survey Vol. 2 The Stationary Office 1998). Kent has a large number of residential and nursing homes (680). A questionnaire was sent, to 68 homes all within a single Unitary Authority, requesting information on the provision of dental treatment and daily oral care. 47 (69%) of the questionnaires were returned. 24 (51%) of respondents reported that dental treatment was provided by general dental practitioners, 12 (25%) by the Community Dental Service (CDS) and 5 (11%) by both. Regular dental examinations were available to all residents in 33 homes (73%), but only on request in 23 (51%). The CDS provides a screening service to those in residential care, only 10 (22%) reported having been offered this service, although 21 (47%) were interested in receiving it. In 35 homes (74%) residents had an assessment of their daily oral care needs on entry. Nursing or auxiliary staff were involved in this assessment in 17 (49%) of these homes and dentists in 8 (17%). In 39 (87%) homes nursing and/or auxiliary staff provided the daily oral care for residents unable to carry out their own care. 26 (55%) of the homes had no staff trained in oral care, but 42 (89%) expressed an interest in advice on oral health. The majority of nursing and residential homes address the dental needs of their residents. There is a need to develop the role of the CDS in screening and advising carers on oral health.

Title **An audit of children's dental anaesthetic services in West Kent, UK**
9 Author S MCGRATH, D KAVANAGH*, C D ALLEN.
West Kent Community Dental Service, West Kent Health Authority,
Aylesford, Kent. GKT Dental Institute, London, UK

The aim of this study was to audit the process of referral and provision of dental general anaesthetics within the Community Dental Service (CDS) in the West Kent Health Authority area. In November 1998 the General Dental Council (GDC) altered the guidelines for the provision of general anaesthetics within the primary care setting (GDC, London, 1998). This audit was carried out to compare procedures prior to the 1998 revision with the ideal standards outlined. The aim was to identify any necessary changes to comply with the new ethical guidance. 259 of case notes (1 in 3 sample) of patients who received a dental GA between April 1997 and March 1998 were reviewed retrospectively by one clinician. 9% of case notes could not be located. 14.5% of medical histories were not updated. At least 5.9% had a second GA within 18 months. In 51.2% cases no alternatives to GA were offered or tried. 9.8% of patients received GA for orthodontic extractions. 11% of referring dentists received notification of treatment plans and 37.6% received discharge summaries. 91.2% CDS patients and 64.2% of General Dental Service (GDS) patients were seen within two months. Recording of dental and anaesthetic procedures was poor. Shortcomings were identified in the administration and documentation of GA procedures. Repeat GA within 18 months may be as high as 26%. GDS patients waited longer than CDS patients for GA. Less than half of the patients had a valid reason for GA or were offered alternatives. The audit indicated that changes in practice would be necessary to comply with the new GDC ethical guidance. Strategies were proposed to enable staff to achieve the GDC standards. This audit was funded by West Kent Health

Authority.

Title	Monitoring children referred from the Community to General Dental Service
10	C D ALLEN*, E H R CLARKE.
Author	West Kent Health Authority, West Kent Community Dental Service, Aylesford, Kent, UK

This study was designed to monitor the referral of children from the Community Dental Service (CDS) to the General Dental Service (GDS) for continuing care. The CDS has a statutory duty (HGS(97)4) to provide treatment to patients experiencing difficulty obtaining treatment in the GDS, the so called 'safety net' role, or for those with special needs. In order that dentally fit children and adolescents in continuing care do not overwhelm the CDS they are encouraged to register with a general dental practitioner. There are concerns that patients no longer being seen within the CDS are not registering with the GDS and it has been found difficult to effect and monitor such referrals (Reilly E M, Blinkhorn A S, B. Dent J. 1993; 174: 137). All CDS patients considered suitable for referral were provided with list of local practitioners accepting NHS patients and given a postage paid postcard to give to the practitioner upon registering. The patient was advised to register within six weeks. A record was kept of all patients referred. In order to track the children, the dentist registering the patient was requested to return the postcard to the CDS. In the period April 1998 to February 2000, 3519 patients were deemed suitable for referral to the GDS. 2836 (80.6%) accepted being referred. 562 (19.8%) of the postcards were returned and 167 (5.8%) patients returned to the CDS. There was no record of the remaining patients (74.4%) having registered or continuing to receive dental care. Although this may not be the case for all individuals, there needs to be a follow-up mechanism up to ensure continuing care is maintained. It has proved difficult to monitor the referral of patients from the CDS to the GDS and there are concerns regarding the continuing dental care of these patients

Title	Measuring the performance of the Public Dental Service in Finland
11	E WIDSTRÖM, M LINNA, T NISKANEN.
Author	National Research and Development Centre for Welfare and Health (STAKES), Helsinki, Finland

Productivity and efficiency are widely used measures of performance in the health care industry. Productivity means the ratio of outputs to inputs and efficiency measures the difference between the observed and the optimal values of output and input of a production unit. The aim of this study was to investigate technical efficiency and its determinants in the Public Dental Service in Finland. In 1997, comprehensive data on workforce, costs, patients and dental visits were collected from the health centres (n=255; response rate 91%). The data were complemented with demographic and financial information from the municipalities in which the health centres were located. First, nonparametric Data Development Analysis (DEA) was employed to assess the technical efficiency. In the second stage, econometric TOBIT analysis was used to explore various predictors of technical efficiency. The results revealed significant differences in technical efficiency between individual health centres. About a fifth of the health centres were operating very efficiently (efficiency scores ≥ 0.8 on a scale from 0 to 1) and about 10% had very low (≤ 0.4) technical efficiency. According to our empirical model, health centres in municipalities where the residents had high taxable incomes were associated with higher efficiency. Furthermore, there was an inverse correlation with the availability of private dental care; low per capita expenditure on private dental care was a predictor of high

technical efficiency in the public dental care system.

Title **Can dentures improve quality of life? - A national survey**
12 Author C MCGRATH*, R BEDI.
Faculty of Dentistry, University of Hong Kong and Eastman Dental Institute, University College London, UK

The aim of this study was to identify variations in the impact of oral health on quality of life (OHQOL) among UK residents in relation to self-reported number of teeth possessed and denture status. In addition, to determine whether recourse to a removable prosthesis for those who claimed that they had experienced considerable tooth loss (having <20 teeth) was associated with quality of life. The vehicle for this was the Office for National Statistics Omnibus survey in Great Britain. A random probability sample of 2,667 addresses was selected in a multistage sampling process. Participants were interviewed about their oral health status - number of natural teeth possessed and whether they wore dentures. The impact of oral health on quality of life was measured utilising the OHQoL-UK(W)© measure. The response rate was 70%. Variations in OHQoL-UK(W)© scores were apparent in relation to self-reported number of teeth possessed ($P < 0.001$) and denture status ($P < 0.001$). Moreover, disparities in OHQOL were apparent among those who experienced considerable tooth loss who didn't have recourse to a denture ($P < 0.001$), recourse to a removable dental prosthesis was associated with OHQoL-UK(W)© scores, for those with <20 teeth ($P < 0.001$) and for those with <10 teeth ($P < 0.001$). In regression analysis, those who claimed that they had <20 natural teeth but had no recourse to a removable dental prosthesis were less than half as likely to enjoy enhanced oral health related quality of life compared to others in the population (OR=0.46, 95% CI 0.31, 0.73), controlling for socio-demographic factors. Conclusion: Self reported number of teeth possessed and denture status was associated with OHQOL, as captured by OHQoL-UK(W)©. In addition, experience of considerable tooth loss without recourse to a removable dental prosthesis is an important predictor of OHQOL and associated with reduced quality of life.

Title **The relationship between sociodemographic factors, attitude and oral health care behaviors**
13 Author P ÜNSAL, T AMMAN, G BERMEK SAYDAM*, OKTAY.
Faculty of Letters, Istanbul University, School of Physical Education and Sports, Marmara University, Istanbul, Faculty of Dentistry, Istanbul University, Turkey

In this study the influence of sociodemographic factors on attitude and the relationship between the attitude and oral health care behaviors and knowledge was investigated, using a 52 item questionnaire of 623 participants living in a semiurban and rural area in Turkey with similar lifestyles. A scale measuring the attitude towards tooth brushing was developed for the purpose of the study. One way ANOVA's were conducted to find out the relationship between attitude and sociodemographic factors, and participants' knowledge and behaviors about oral health care. In general, sociodemographic factors such as sex, age, birthplace, living area, occupation, and education level were not found to be significantly related to the attitude towards tooth brushing. A positive attitude towards tooth brushing was found to be significantly related with regular tooth brushing, having an idea about the price of tooth brushes and frequency of changing tooth brush, having a desire to have someone to teach how to brush their teeth, and having a habit of tooth brushing since childhood. With respect to the participants' knowledge about the relationship between dietary habits and tooth decay, the participants having an opinion (either right or wrong) had more positive attitude than the participants having no opinion. The results of the study indicated that attitude as a determinant

of oral health care in this group and leads the idea of putting emphasis on knowledge of attitude dynamics of the targeted population in designing and delivering main message of the dental health education. This study was funded by Banat and Colgate.

- Title **Uptake of primary dental care by older UK South Asians**
- 14 M J PRENDERGAST*, S A WILLIAMS.
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 Dental Institute, University of Leeds, England

This study aimed to determine the uptake of regular dental care by people aged 45 years and over of South Asian (SA) origin (India, Pakistan or Bangladesh) in Leeds. A limited number of studies among UK communities show a lower reported uptake than in the general population. Identifying data (name, date of birth, gender and postcode) for adults over 45 years of age were extracted from the Leeds Health Authority database. A computer program, Nam Pehchan©, was used to identify and analyse SA names (Cummins C, et al. J. Public Health Med. 1999; 21: 401-406). Manual inspection by an expert panel supplemented the program for classification by religion and language. For those identified as SA, uptake of dental care was determined by checking Dental Practice Board (DPB) records for registration with an NHS dentist. Of the 78012 names from the database, 4850(6%) were identified as SA and of those, 1404(29%) were registered with a dentist. Registration rates were similar for the three main religious groups (Hindu, Muslim and Sikh). However, within the Muslim group, the rate for Bangladeshis (24/121, 20%) was lower than for Pakistanis (708/2372, 30%), ($P < 0.001$, Chi²). A significantly higher proportion of women was registered in each religious group except older Sikhs where the rate was higher for men. DPB statistics show that at the time of the study there was a registration rate of 50% for Leeds adults 45 years and over. It is concluded that uptake of regular dental care is comparatively lower among older south Asians in Leeds particularly those of Bangladeshi Muslim origin. The results of this study form a baseline for evaluation of oral health promotion initiatives to encourage regular dental attendance. Funded as part of the NHS National Research and Development Programme on Primary Dental Care.

- Title **Mapping caries prevalence and water distribution in Wales**
- 15 M Z MORGAN*1, G JONES2, C POWELL3, I G CHESTNUTT1, E T
Author TREASURE1.
 1University of Wales College of Medicine; 2Gwent Health Authority;
 3Hyder, Bristol, UK

This study was designed to investigate the use of mapping packages in determining the water distribution from treatment centres in relation to dental caries prevalence and population. The use of water fluoridation as a cost effective caries preventive measure is dependent on the population density of the area supplied by a water source and disease burden within that community. This study, a collaborative venture between the all-Wales fluoridation steering group, the Welsh water company, Dwr Cymru, and the University of Wales College of Medicine, compared maps generated using MapInfo version 4.1 and AutoCAD version 14. Data from BASCD epidemiological surveys, ONS mid-year census population estimates and water supply zones for all areas in the Principality were plotted and maps generated to identify the relationship between water flow and areas of high caries prevalence. This presentation uses maps from one area of Wales to illustrate the findings. The practical difficulties encountered in this exercise included: compatibility between different mapping packages and lack of co-terminosity between administrative districts. This technique enables disparate data bases to be combined enabling visual analysis of the results. The maps facilitate decision making as to the most beneficial areas to fluoridate and also enable cross boundary flow between different

treatment centres to be easily identified. The maps produced will be of value in determining the feasibility and targeting of water fluoridation in Wales. The maps consolidate a large amount of technical information from a number of sources and present them in an user-friendly manner. This study had financial support from the National Assembly for Wales.

- 16** Title **Awareness of incisal blemishes among Scottish 14 year olds**
Author Z J NUGENT*, N B PITTS.
Dental Health Services Research Unit, Dundee Dental Hospital and School, Dundee, Scotland

The objective of the study was to examine whether factors which cause marks on upper incisors are associated with subjects' awareness. Of 5981 Scottish 14 year old children examined clinically in 1998 as part of the Scottish Health Boards Dental Epidemiological Programme, 5655 had their upper incisors examined for developmental defects of enamel and answered the questions 1) Do you have any marks on your front teeth which won't brush off? and, if the answer was "yes" 2) Does the appearance of these marks bother you? The sample was divided into 3 groups: unaware of marks; aware, not bothered; aware, bothered. Potential predictors of awareness were fluorosis - like marks (symmetrical, diffuse opacities), other developmental defects of enamel, sex of the subject, and any decay, fillings or trauma on the mesial, buccal or distal surfaces of the upper incisors. Analyses were conducted using - 2 and Answer Tree. Each predictor increased awareness of marks ($P < 0.01$). The strongest predictor was "non-fluorotic" defects. Fluorosis-like defects were the strongest predictor among subjects non-fluorotic these defects. However, in no sub-group were as many as 25% of subjects bothered by marks. In only one group (females with both fluorosis - like marks and "non-fluorotic" developmental defects) were more than half of the subjects aware of marks. Conclusions: Many conditions contribute to an adolescents awareness of blemishes on incisors. In the majority of cases, regardless of the clinical picture, the subject is unaware of a problem. Even if aware, the majority of subjects were "not bothered". Since decay and fillings also contribute to awareness of blemishes, the role of fluoride may be over-rated as a potential contributor to cosmetic problems. Supported by the Scottish Executive and Scottish Health Boards

- 17** Title **Healthy Hillfields Children Project**
Author S L BOULTON*.
Dental Public Health Department, Coventry Health Authority, UK

The objectives of the project were; the reintroduction of free school milk to primary schools; easing accessibility to free school meals; establishing provision of culturally sensitive, nutritionally sound, school meals; the introduction of school water fountains; and delivery of an oral health programme, in an area of severe social deprivation. A questionnaire was sent to carers of children from selected school years in the area. Questions examined oral health status, dental attendance, number/age of siblings, length of residence in the area, language spoken at home and employment status/aspirations. Each child received free toothbrushes and toothpaste throughout the school year, along with a structured programme of dental health advice. Children were split into three cohorts to test the value of the dental input. Dietitians monitored the nutritional content of meals provided and catering services recorded uptake of school meals and milk. The project identified little sign of any change in patterns of oral health. Uptake of school meals was reported to increase. Only 2 of the 5 institutions involved asked for and received free school milk. None installed a new water fountain (one reported an existing fountain). For political reasons no easing of the process concerning free school meal provision was possible. Questionnaire data revealed that X% of carers who were unemployed wished to

be involved in caring professions. 74% of carers stated that they were eligible for free dental treatment. 66% reported receipt of social security benefits yet only 42% indicated that their children claimed free school meals. School meals have become more a attractive option, new education programmes in the area are targeted to local interest, the issue of access to free school meals has been highlighted and schools have the option of continuing milk provision under subsidy schemes.

18 Title **Evaluation of the knowledge of oral healthy behaviours in schoolchildren and parents in the District of Paredes, Portugal**
Author H NEVES*, J FRIAS-BULHOSA*, J M CALDAS**, Portugal

The aim of this study was to investigate the knowledge, attitudes and habits about oral health in all the schools (n=8) involved in an oral health promotion programme in the District of Paredes, Portugal. A sample of 330 schoolchildren, aged 6-11 years, of the first grade of a public primary school, and their respective parents was chosen. A self-administered questionnaire regarding oral hygiene habits, oral health practice and knowledge was completed in school by the children. A separate questionnaire was given to the parents in order to assess their oral health knowledge, attitudes and practices in relation to oral health education of the children. The results indicate a lack of regular oral hygiene habits among the children. They also show that the use of dental services occurs only when disease was obvious and established. The parents showed a limited knowledge of items responsible for oral disease and they believed that oral hygiene was sufficient to assure dental health for life. This study demonstrates to the public health administration the necessity to invest in oral health education and promotion in schools to provide healthy adults in the future and with more information for education of respective children's.

19 Title **School performance: population based indicators of dental treatment need**
Author E CROWLEY*, G O'BRIEN ,W MARCENES.
Oral Health Services Research Centre, University Dental School, Wilton, Cork, Community Dental Services, Bexley and Greenwich, UCL and QMW

The aim of the study was to test the association between measures of dental restorative treatment need and the Jarman underprivileged area score of the school location, measures of school performance and the percentage non-United Kingdom origin pupils per school. An ecological study using clinical data aggregated by school, collected previously during school dental inspection examinations (1996-97), National Census, 1991 and the UK school league tables. Setting: All 63 state primary schools in the Greenwich District of SE London, UK (1996-97). Subjects: 14,043 pupils (6-11 years of age) distributed into 63 schools. Outcome measures: The percentage of 6 to 11 years old pupils per school requiring dental restorative treatment and the mean number of decayed permanent teeth per pupil per school. All 63 schools were included in the analysis of the variables for the 6 to 11 years old pupils aggregated by school. The data was also analysed separately for the 11 years old pupils aggregated by school. It was found that for the 6 to 11 years old group that poor school performance in all three subjects, English, Mathematics and Science correlated with treatment need as measured by both outcome variables. Deprivation as measured by the Jarman Index of the school location and the percentage non-United Kingdom origin pupils per school were found not to correlate with the clinical outcome variables ($P>0.05$). The Jarman Index components of overcrowding ($r=0.30$, $P=0.014$) and numbers unemployed ($r=0.25$, $P<0.05$)

were found to correlate with the mean number of decayed teeth per child per school. Multiple regression was carried out relating treatment need to the variables of school performance ($r^2=0.322$) School performance may be a potential predictor of dental restorative treatment need. However, it requires further investigation.

20

Title	Comparison of caries data recorded by trained examiners with those obtained from public dental records
Author	H HAUSEN*, S KÄRKKÄINEN, L SEPPÄ. Institute of Dentistry, University of Oulu, Oulu, Finland

The aim was to assess the usability of public dental records in evaluating spatial differences and time-related trends in caries frequency among contemporary child populations. This was done by comparing DMFS values based on data collected from public dental records to those recorded for the same subjects by trained examiners. In 1992 and 1995, random samples of all children aged 12 and 15 years were drawn in the towns of Jyväskylä and Kuopio, Finland. Trained and calibrated examiners examined the children without having access to their personal dental records. A copy of the personal record of each child was obtained from public dental clinics. A dentist who was familiar with the recording system of the public dental clinics entered the dental status appearing in the record into a computer file, and the corresponding DMFS value was calculated for each child using a computer program. Data from both sources were available for 716 subjects. For 48% of the subjects, the DMFS values calculated from the two data sets were equal. The difference was one DMF surface for 28% of the subjects, and two surfaces for 11%. The distribution of discrepancies was fairly symmetrical, implying that the trained examiners had not systematically recorded more DMF surfaces than the public health dentists. The mean DMFS value obtained from the dental records was 2.9 (SD 4.1) and that recorded by the trained examiners 2.7 (3.8). At most, the public health dentists had recorded 9 more DMF surfaces than the trained examiner (one case). The biggest difference to the opposite direction was 7 surfaces (one case). Severe discrepancies were infrequent: the difference was more than 3 surfaces for 7% of the subjects. It is concluded that at least in large samples, data from public dental records can be used for monitoring caries situation.

Epidemiology

21

Title	Caries prevalence surveys - a multi-country comparison of caries diagnostic criteria
Author	N B PITTS*, C DEERY, H E FYFFE, Z J NUGENT. Dental Health Services Research Unit, University of Dundee, Scotland, UK

The objective of this initial study was to start to compare, in vivo and in vitro, caries diagnostic criteria and methodologies routinely used in 3 European countries and the USA for caries prevalence surveys of children. These were also to be compared with 2 new visual clinical methods. Regular surveys of the caries prevalence of children are undertaken throughout the developed world. However it is recognised that different countries, and often different regions within the same country, can be found to use different caries diagnostic criteria. This would appear to make direct inter-country comparison of caries prevalence problematic. Nine trained and calibrated dental examiners, seven from Europe and two from the USA agreed to take part in this study which was undertaken in Scotland. A group of ten children in two key age groups (6 years, 12 years) were examined, under survey conditions, in school by each of the examiners working to their own standard methodology and criteria. Examiners also examined 160 extracted molar teeth (in phantom heads) on two occasions to determine intra-examiner

agreement and diagnostic validity. One examiner used FOTI as a diagnostic adjunct, all examined at the level of caries into dentine (nominally the D3 diagnostic threshold) and 5 additionally at the level of caries in enamel and dentine (nominally the D1 diagnostic threshold). The total D3MFT recorded varied from 29 to 51 (12 yrs), for d3mft the range was from 20 to 32 (6 yrs). Discussions after the data collection phase revealed a number of areas of commonality across systems, as well as some fundamental differences of approach. Although a degree of variation was found in the overall caries levels obtained using the differing criteria, further work is now required to disaggregate the contributing factors. Supported by CSO/the Scottish Executive and FDI

Title	Community Project "Nutrition, Environment and Dental Health" for pre-schoolchildren
22	A BORUTTA*, D TELLER,
Author	Dept. of Preventive Dentistry, Friedrich-Schiller-University of Jena, Germany

The percentage of caries free children is the most important indicator of oral health in pre-school children. In Thuringia children aged 2 to 6 years showed considerable deficits. Thus the community prevention project "Nutrition, Environment and Dental Health" was launched in Thuringian kindergartens in 1996. The effects of this project in terms of changes in dietary behavior on oral health (dmft) were analysed in epidemiological studies of more than 800 randomised children between 2 and 6 years of age in 1996, 1997, and 1998. The results suggested that there was a considerable improvement in the dietary understanding of 92% of the children. Moreover, 49% of the subjects changed their nutritional behavior. The percentage of caries free 6-year-old children was at baseline low at approximately 35%, increased to 44.2% in 1997 and decreased to 36% in 1998. In 1996 caries prevalence among 2-year-old children was low with 0.2 dmft and increased by age to 3.3 dmft among 6-year-olds. During the study period the dt values always exceeded the ft and mt values and more than 40% the 6-year-olds showed a treatment need. According to German criteria (DAJ 1993), 4% (4-year-olds) to 30% (5-year-olds) of all subjects had a high caries risk. The results led to the conclusion that there are still considerable deficits in oral health among young children. In the future all known preventive measures must be implemented more effectively and made accessible to all children, if further improvements in oral health should be achieved.

Title	The association between all age, all cause mortality and DMFT in 12-year-old children in Europe
23	C M JONES*, K WOODS K.
Author	North West Dental Public Health Resource Centre, Wesham Park Hospital, Preston, PR4 3AL, England

The objective of the study was to assess the relationship between all age, all cause mortality and the mean DMFT of 12-year-old children in European Countries. The affluence/poverty variation is one of the most powerful determinants of health within a society. Tooth decay and mortality have a strong positive association with poverty when viewed on a geographical basis. Mortality has been used as a surrogate for social conditions when looking at variations in tooth decay in English Health Authorities (Nadanovsky P, Sheiham A, Community Dent. Health 1994; 11: 215-223). They confirmed that broad socio-economic factors were important determinants of DMFT. In the absence of an accepted international measure of deprivation, death rates could be a proxy for studying the relationship between oral health and poverty in different countries. Mean DMFT of 12-year-olds and the 1994 European Standardised Death Rate (SDR) were collected for 35 countries. There was over a nine-fold variation in mean

DMFT. The SDR varied from 630 to 1608/100,000 population. There was a strong, positive, statistically significant association between all cause SDR and DMFT (Pearson's $R=0.79$, $P<0.01$, Spearman's $\rho=0.75$, $P<0.01$). The significant association between SDR & DMFT is unlikely to be causal. Common risk factors associated with socio-economic deprivation (poor diet and poor access to primary medical and dental care) are implicated in both dental decay and the main causes of mortality in Europe; coronary heart disease, cancer and stroke. This study confirms that health inequalities linked to poverty in childhood, which continue until life ends, are endemic across Europe.

Title **Prevalence of enamel opacities in preschool children in Amman**
24 R D HOLT*, N DHAWAN, A SAYEGH.
Author WHO Collaborating Centre, Eastman Dental Institute, University
 College London, London, UK

The aim of this study was to determine the prevalence of enamel opacities in primary incisor teeth of young children in Amman, Jordan using a photographic method and two different indices. Enamel defects and more particularly fluorosis, have been widely studied in permanent teeth but there is less information about defects in primary teeth. In one previous study in Saudi Arabia (Rugg Gunn A J, Al-Mohammed S M, Butler T J Caries Res. 1998; 32: 181-92) a high prevalence of defects was associated with disturbed nutritional status in early life. Assessment of enamel defects was from colour photographs of primary maxillary incisors for a total of 1106 children aged 4-5 years from Amman, Jordan. Photographs were taken using a 90 mm lens, ring flash and power unit and were examined by a trained and calibrated examiner under standardised conditions. Scoring was carried out using the Thylstrup and Fejerskov (TF) index and the modified DDE index. Using the TF index, 325 (29%) of children had opacities. For 232, scores were no greater than 1, 64 children had at least one score of 2 and 29 children had a score of 3 or more. Using the modified DDE index 341 (31%) had opacities, with 219 (20%) having diffuse defects. Tooth prevalence was 16% using both indices. There was agreement between the indices as to the presence/absence of an enamel defect in 85% of surfaces. It was concluded that prevalence of enamel defects in primary incisor teeth in the low fluoride city of Amman was in the region of 30%, lower than that seen in a previous study in the Middle Eastern region. Prevalence estimates were similar using the two indices.

Title **Caries experience and dental attendance of Somali children in Sheffield.**
25 P M BATEMAN*, H D LUNN, H D RODD, L E DAVIDSON.
Author Community Health Sheffield, North Nottinghamshire Health Authority
 and University of Sheffield, UK

This study was designed to assess caries experience and dental attendance patterns of Somali children living in Sheffield and to investigate the effects of gender, age, birthplace and the mother's ability to speak English. A cross-sectional survey of 4-14 year-old Somali children was undertaken, subjects were recruited from religious education classes, homework groups and selected primary and secondary schools. Data were collected by means of a structured interview and clinical examination and analysed in 3 different age groups (4-6, 7-10 and 11-14 years). Caries levels were greatest in UK-born children ($P<0.001$ or <0.025) and in elder children whose mothers spoke English ($P<0.001$); in the younger children the opposite was found ($P<0.001$). Just over half of the study group stated that they had attended the dentist in the previous 12 months, and were equally likely to have attended for a routine check-up or because of specific problem. There were significant differences in attendance patterns according to the mother's ability to speak English ($P=0.004$). Older children were significantly

more likely to have attended the dentist in the last year than younger ones ($P < 0.001$). Some Somali children have a very high caries experience. As a greater proportion of children are being born in the UK, without the benefit of systemic fluoride, it is likely that the overall caries levels for this community will increase further. Effective dental health promotion initiatives are indicated for this minority ethnic group. Funding was provided by a Sheffield University Alumni Caring Community Award.

- 26 Title **Black stain and caries in schoolchildren in Weinheim, Germany**
Author MJ KOCH*, G ULLMER.
Poliklinik für Zahnerhaltungskunde, Ruprecht-Karls-University,
Heidelberg, Germany

The presence of black pigmented dental plaque (black stain) has been described to be associated with a lower caries experience. In this study, we examined the presence of caries (according to WHO criteria) and the presence of black stain in 15-year-old schoolchildren ($n=518$) in Weinheim, Germany. A total of 23 children exhibited black stain, the mean DMF-T was 1.3 ± 1.5 . DMF-T of children without black stain was 3.3 ± 3.3 , the difference was statistically significant ($P=0.004$). Our results confirm the earlier observation of a lower caries experience in children with black stain. This could be explained by a low pathogeneity of the microorganisms in black pigmented plaque, but also by other factors such as an increased interest to preventive measures in the subjects affected or nutritional habits.

- 27 Title **Dental caries experience in Greece. A systematic review 1980-2000**
Author P DAMASKINOS*, I LAMPADAKIS.
Dental Department, Evangelismos Hospital, Athens, Greece

The aim of the study is to show the trend of declining dental caries experience in Greece during the last two decades. Due to different criteria used for assessment of caries the data is comparable only in part, but the epidemiological studies were conducted in urban, semiurban and rural areas all over the country. The values of dmf and DMF vary even in the same districts and - as expected - are correlated with the concentration of fluoride in the community water. In areas with natural fluoridated water the dmf and DMF values are significantly lower. In 1987, Moeller and Marthaler found that the DMF T was 4.4 among 12 year-old children (Moeller I.J., Marthaler T.M. W.H.O. 1987). There are still many areas in Greece with a very high DMF score. In 1994, a decrease of caries prevalence was found at the age of 12, at 27.8% (DMF from 6.78 to 4.79) (Topisoglou V et al., Paidodontia: 8(4): 171-182, 1994). Changes in caries prevalence were also observed in other research in 1994, where the reduction ranged from 38% to 70%. The decline in caries levels may be attributed to the increased use of various forms of fluoride. Dental caries experience is reducing as demonstrated by several epidemiological studies but there is a definite need for a continuous and effective program of dental care.

- 28 Title **Inequalities in oral health of primary schoolchildren in Flanders (Belgium)**
Author J VANOBBERGEN*, L MARTENS, E LESAFFRE, D DECLERCK.
University Ghent, Catholic University of Leuven, Section Oral Health
Promotion and Prevention - Flemish Dental Association, Belgium

The present study aims to investigate differences in oral health condition in 7-year-old Flemish children and to assess underlying risk indicators. Cross-sectional first year data of the longitudinal Signal-Tandmobiël® survey (J. Vanobbergen e.a. Eur. J. Paed. Dent., to be published in June 2000) were analysed (n=4468) for that purpose. Clinical data were collected on school premises in a mobile dental clinic. Additional data on oral health habits and socio-demographic background were obtained by questionnaires completed by parents and school health centres. The mean dmft score was 2.24 (SD=2.81), ranging from 0 to 18 and 44% of the children had no caries experience. The skewed distribution resulted in a polarisation with 27% of the children bearing 75% of the caries. The mean dmft/s values between the several SES-groups, based on parental occupational status, were significantly different (P< 0.001). They were the lowest for the most advantaged children (1.3/2.7) and finished threefold higher in the least advantaged children (3.9/9.1). The shift in care and restorative index was significant at the 0.05 level. From the multiple logistic regression analysis it became clear that the following risk indicators were significant (at 5% level) for the presence of caries: frequency of tooth brushing, age at start of brushing, regular use of fluoride supplements, daily use of sugar containing drinks between meals, and number of between-meals snacks. The results of the present study allows us to conclude that inequalities in oral health among children still exist in Flanders. By lack of water fluoridation supply, the cumulative effect of oral hygiene, dietary habits and fluoride supplementation need to be emphasised in special targeted risk groups. This study was supported by Unilever Belgium.

Title	Survey Plus 2 - software for oral health data collection/analysis
29 Author	C D RAMSAY*, N B PITTS, Z J NUGENT, H E FYFFE, I W RICKETTS. Dental Health Services Research Unit, Dundee Dental Hospital and School, University of Dundee, Department of Applied Computing, University of Dundee, Ireland

A new Microsoft Windows based computer program (Dental Survey Plus 2) has been developed as a low cost solution to problems faced in the collection and analysis of data during dental epidemiological surveys such as those conducted annually by the British Association for the Study of Community Dentistry. Previously available DOS-based computer programs were reported as being unwieldy, unforgiving and lacking in online support, whilst paper based systems of data collection have reportedly introduced delays of up to 6 months in survey reports being prepared, and less informative analysis being conducted at local levels (Ramsay CD, Development of Software for the Collection and Analysis of Dental Epidemiological Data, MSc Thesis, University of Dundee 1997; 1-14). The new software, which was developed via continuous consultation with a sample of intended end users, provides a flexible visual platform for the design of epidemiological surveys; simple and fast survey data collection and editing; a broad range of general statistical analyses with many dental specific calculations built in; and an extensive online help system with walk-through examples of using the software. Since its release with over 250 copies being distributed to Health Authorities and individuals throughout the UK and further afield, the results of a user questionnaire revealed that at least 60% considered it to be better or as good as any other epidemiological software they have used previously. New methods of distribution via the internet are being explored. The software provides a low cost, easy to use solution for the design, collection and analysis of any survey, questionnaire and simple database related information. Funded by the British Association for the Study of Community Dentistry, Health Authorities throughout England and Wales and Scottish Executive.

Title **Child dental health explanatory variables in a Flemish and Scottish cohort**

30 D DECLERCK*, C PINE, J VANOBBERGEN, L MARTENS, G BURNSIDE, E LESAFFRE.

Author Catholic University Leuven, University Ghent and Flemish Dental Association (Belgium); Dental Public Health, University of Dundee (Scotland)

A collaborative study was set up to elucidate similarities and differences in child dental health in Flemish and Scottish children and to investigate key explanatory variables. Data were obtained from a cohort of Flemish (city of Gent, n=261) and Scottish (city of Dundee, n=152) children at ages of 7 and 10 years. Both areas are provincial university cities with comparable population size and low F-levels in the drinking water (Gent: <0.16 ppm; Dundee: 0.01 ppm). Dental examinations were conducted following BASCD-criteria (Pitts N B, Evans D J, Pine C M. Community Dental Health 1997: 14 (Suppl 1): 6-9) and supplemented with information on oral health habits (questionnaire to parents) and parental occupation. Dundee children showed higher caries experience levels in both primary and permanent dentition (dmft at 7: 4.07 versus 2.00; DMFT at 10: 0.94 versus 0.57) with lower numbers of fillings but higher extraction rates. Scottish children brushed more frequently, took daily breakfast less often and took sweets more often to school. In both cohorts oral health was strongly related to occupational status of the parents. Stepwise logistic regression was used to model the increase in caries experience in the permanent dentition between 7 and 10 years. In both cohorts dmfs at 7, age at start of brushing and oral hygiene level were significant explanatory variables. Children with poor oral hygiene were more likely to show an increase in DMFT between the ages of 7 and 10 (Odds ratio's for Dundee 2.73 and Gent 2.04). Only in the Scottish cohort, children who never received systemic fluoride supplementation were more likely to have caries in the permanent dentition (Odds ratio: 2.81). This study is part of the Signal Tandmobiel project in Flanders and was supported by a grant from the British Council and Flemish Scientific Fund (V 7.010.98N).

Title **Is it a good idea to fill deciduous teeth?**

31 D KING, K M MILSOM*, M TICKLE, A S BLINKHORN.

Author General Dental Practitioner, Chester and Halton Community Trust, Manchester Health Authority, Manchester University Dental School, UK

The objective of the study was to compare proportions of restored and unrestored deciduous teeth that exfoliate naturally or are extracted due to pain or sepsis. The care index for 5-year-old children has fallen dramatically over the last 15 years. This has been a cause for concern, however this concern is based on the assumption that restored deciduous teeth have better clinical outcomes than unrestored teeth. A retrospective study of the case notes of 677 children who received their dental care from 50 General Dental Practitioners (GDPs). All subjects had a history of approximal caries, were regular attenders and a full history of their deciduous dentition could be traced. Cross-tabulations and chi square tests were used to compare the outcomes of restored and unrestored teeth according to size of lesion and by tooth type. Restored and unrestored teeth were also cross-tabulated with whether or not the tooth was treated antibiotics. Most first (80.2%) and second (85.7%) carious deciduous molars were filled during their lifetime. The majority of carious deciduous teeth exfoliated naturally, as high as 96% for anterior teeth. There was no difference in the proportions of teeth extracted due to pain or sepsis whether a carious tooth was filled or left unfilled, either by cavity type or by tooth type. There was also no difference in the number of courses of antibiotics prescribed irrespective of the restoration status of the teeth. The vast majority of carious teeth exfoliate naturally. Filling carious deciduous teeth offered no advantage to leaving carious teeth unrestored if natural exfoliation and avoidance of extraction due to pain or sepsis is the desired outcome.

Unrestored carious teeth are no more likely to provoke a prescription for antibiotics than restored teeth. The study was supported by UK National Primary Dental Care R&D fund

- 32 Title **Oral health and treatment need in children and adolescents aged 5, 12 and 15 years in the Czech Republic 1998**
Author O KREJSA*, Z BROUKAL, L MRKLAS.
Institute of Dental Research, Prague, Czech Republic

An epidemiological survey of oral health of children aged 5, 12 and 15 years was conducted in 1998. Altogether, 435 5 year-olds, 452 12 year-olds and 450 15 year-olds were examined. Dental and periodontal status were recorded and following index values were calculated: dmft, DMFT, % caries free, % of dmf, (DMF) components, CPITN, Restorative Index, dental and periodontal treatment need. Data gained in 1998 were compared with those of previous studies in 1993 and 1987. The average value of dmft in 5 year-olds was 3.69 and the percentage caries free amounted to 26.7%. In 12 year-olds and 15 year-olds the DMFT amounted to 3.38 and 4.95 respectively and the percentage of caries free was 13.9% and 9.8%. Restorative indices in 5, 12 and 15 year olds were 23.0%, 71.2% and 82.4% respectively. The percentage of 15 year olds with 5 or more sextants CPI=0 was 73.8%. When the above data were compared with those of a previous survey in 1987, the following significant changes were observed: the caries experience in the deciduous dentition increased and the percentage of caries-free pre-school children decreased. In 12 year-olds a light increase in caries experience was observed, while 15 year-olds showed a significant decrease in caries experience and improvement in periodontal health. Restorative index remained the same in 5 and 15 year-olds and decreased in 12 year-olds. The transformation of the health care system in the Czech Republic in the first half of the nineties influenced negatively the oral health status of pre-school and school- children while that of adolescents improved. Supported by grants IGA MH CR No. 4928-2 and 4949-3.

- 33 Title **Enamel opacities in 8-year-old Icelandic children in relation to their medical history as infants**
Author I B ÁRNADÓTTIR*, H SIGURJÓNS, W P HOLBROOK.
Faculty of Odontology, Univ of Iceland, Reykjavík, Iceland

Opacities in tooth enamel were found in 34% of subjects in a study of 8-year-old Icelandic children carried out in 1970 before fluoride became widely available in Iceland (Möller P 1981; monograph: University of Alabama School of Dentistry). As part of a larger investigation, a random sample of 290 children aged 8 y living in Reykjavík Iceland was examined in 1997-8 and the prevalence of demarcated enamel opacities recorded photographically using standardised techniques with trained and calibrated examiners. Prior ethical approval for the study had been obtained. Parents of the subjects were asked if the child had (i) a history of colic as an infant; (ii) if the colic had been treated; and (iii) if the child had a history of repeated middle ear infection. Demarcated white enamel lesions, not resembling fluorosis, were seen in 41% of children when the teeth were photographed wet rising to 51% when the photographs of dry teeth were examined. In addition enamel hypoplasia was seen in 11% of photographs of wet teeth and 15% of dry teeth. The parents of 94/288 children (32.6%) reported that their child had colic as an infant and 52/94 (55.3) of these children had received medication. Three episodes or more of middle ear infections per year were reported for 123/290 (42.4%) of children. Non-fluoride opacities of tooth enamel are still prevalent in Icelandic children especially those with a history of infections in infancy. Without a careful diagnosis these opacities might be confused with fluorosis. Supported by the Icelandic Council of Science and the University of Iceland.

Title **Clinical oral health of elderly (65 yrs+) in Northern Board**
NI M BRADLEY*1, K CASSON2, J CULLEN2, J MILLAR3, J
34 Author STEELE4.
Homefirst Trust1, Northern Board 2, Causeway Trust 3, Dept of
Restorative Dentistry, University of Newcastle upon Tyne4

The aim of this study was to assess the clinical oral health of a random sample of elderly adults (65 years+) independently living and 'cared for' in the community, using chosen clinical parameters. This will inform and assist future planning of dental care for the elderly population in Northern Health and Social Services Board (NHSSB-NI). The NHSSB comprises approximately one quarter of the total population of NI. It is predicted that by 2009 there will be a 19% increase in its elderly population. There is limited information on the dental health of this population sub-group. A cross-sectional survey of a stratified random sample of 484 (approx 1% of elderly adults in NHSSB) was achieved. The data was analysed using two sample t-tests. Fifty two percent of the total sample retained some natural teeth. Fifty four percent of independently living respondents are dentate, compared to 19% of those being 'cared for'. Dentate free-living participants averaged 14.8 teeth, with an average of 2.1 decayed teeth. Despite the fact that 83% of the total sample lived within 5 miles of a dentist, rural participants had significantly more decay ($P < 0.01$). Women had significantly fewer decayed teeth than men ($P < 0.01$), as had those who were registered with a dentist ($P < 0.05$), and those who 'reported' being regular dental attenders ($P < 0.01$). We conclude that oral health programs should be targeted at specific sub groups of the elderly population in order to improve their oral health; men, rural dwellers, those not registered with a dentist, and those who report irregular dental attendance. The survey was commissioned by the Director of Dental Services and funded by NHSSB.

Title **Oral health status in elderly institutionalised adults in Vale do**
35 **Sousa Region, Portugal**
Author J FRIAS-BULHOSA, M VIEIRA, J MEIRELES,
Dept. Child's Oral Health and Prevention, Portugal

The main purpose of this study was to investigate the oral hygiene, caries status, presence of calculus and gingival bleeding and to assess the presence, quality of the stomatological prostheses used in 136 adults (58 men, 78 women) aged 60 and over, institutionalised in community hospitals in the Vale do Sousa region in Portugal. Examinations were conducted according to WHO criteria for oral health surveys. The results indicate that 27% of the sample was edentulous and the tooth morality rate was 69.13%. 69.8% of the dentate individuals have at least one carious lesion. 98% of the individuals have an inappropriate method of hygiene of the teeth and the prostheses. Calculus was present in 89.1% of the individuals and 91% have gingival bleeding. 99% of the individuals use removable prostheses and 66.6% of the edentulous individuals use stomatological prostheses. Quality- of-life measures indicate that significant morbidity (pain, alteration of speech, alteration of taste and denture stomatitis or ulcers) related to the wearing of removable stomatological prostheses. Many prostheses must be replaced. Expense of replacement must take into account the socio-economic status of the individuals. The future demographic increase of elderly people (>60 years) in Portugal in the next 50 years is estimated at 37%. This indicates that a change is necessary in planning the organisation of the dental services and in the promotion of oral health education.

Title **Plaque scores in 12-year-olds awaiting orthodontic treatment in Dublin, Ireland**

36 TJ LEONARD, CM MCNAMARA1, DM O'MULLANE2.

Author Regional Orthodontic Department, St. James' Hospital, Dublin 1 and Oral Research Centre, National University of Ireland, Cork, Ireland 2

The aim of the study was to examine 12 year old children on the orthodontic waiting list and compare their plaquescores with 12 year olds attending their local clinics for routine dental care. A randomsample from the waiting list (n=105) was matched by a sample of children from local schools (n=103) stratified by gender and socio-economic status The examinations were carried out in clinics by a single examiner (TJL) calibrated in the use of the GLOBAL plaque index. The scores (mean percentages) recorded were; ortho group 10.97 (± 4.31) compared with 9.16 (± 3.47) for the controls ($P=0.01$). Boys (n=107) scored 10.20 (± 3.67) while girls (n=101) had scores of 9.93 (± 4.36) ($P=0.625$). Children of medical cardholders i.e. low income (n=48) had a mean score of 10.85 (± 3.97) compared to 9.84 (± 4.00) for non medical card holders (n=160) $P=0.125$). Children referred for orthodontic assessment had significantly higher scores for plaque coverage compared with children attending their local clinic for routine dentalcare. No significant difference was found when the plaque scores for boys and girls were compared or when children of medical cardholders were compared with non-medical cardholders.

Caries prevention

Title **Changes in dental health and oral behaviours in a group of French children**

37 S TUBERT-JEANNIN*, A MOREL, H GOUSSAUD, A WODA.

Author Faculty of dentistry, Clermont-Ferrand, France - Auvergne Regional sick-fund for independent professionals, France

A French sick-fund is actually testing a new dental benefit plan. The programme concerns 5-year-old children living in a single region (Auvergne). Participants undergo an annual examination until their 15th birthday. If the child is seen every year, all services related to dental caries (preventive and restorative) are provided free of charge. Moreover, a personal dental health book is given to each participant that includes information on caries prevention. An ongoing evaluation of the programme is conducted (Tubert-Jeannin S, Morel A, Community Dent. Oral Epidemiol., 1998, 26, 272-82). This paper presents the changes in dental health and dental behaviours of 112 children born in 1988 who participated in the programme between 1994 and 1998. The mean dfs varied from 2.82 (7.42) at 6 years to 3.66 (5.3) at 10 years and the mean DMFS increased from 0.05 (0.57) to 1.87 (2.71) between 1994 and 1998. The reported brushing frequency increased throughout the survey (Wilcoxon paired test $P<0.001$) given that 90% of the children were using a fluoridated toothpaste. The percentage of fluoridated salt consumers increased from 56.2% to 67.3% between 1994 and 1998 (Mac Nemar paired test-NS) while the use of fluoride supplements decreased from 38.1% to 27.1% with children aging (Mac Nemar paired test $P<0.01$). The mean DMFS and dfs in 1998 were strongly related to the brushing frequency reported in 1994 (Mann Whitney test- $P<0.01$). Caries experience of 10 year old children was not related to the use of fluoridated salt (Mann Whitney- $P>0.05$). It was related to the consumption of fluoride supplements at the age of 6 years (Mann Whitney- $P<0.05$). Those results indicate that it could be useful in this programme to focus dental health information on oral hygiene in relation with the use of fluoridated toothpastes.

38 Title **Caries frequency during 1992-1998 in two Finnish towns, one with previously fluoridated water**
Author L SEPPÄ, S KÄRKKÄINEN*, H HAUSEN.
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Water fluoridation in Kuopio, Finland, was stopped in the end of 1992. In our previous study no increase in caries frequency was found in Kuopio three years after discontinuation of water fluoridation (Seppä L, Kärkkäinen S, Hausen H. Community Dent Oral Epidemiol 1998; 26: 256-62). The aim of the present study was to further monitor the occurrence and distribution of caries in Kuopio and Jyväskylä, which was used as the reference town for Kuopio. In 1992, 1995 and 1998 independent random samples of all children aged 3, 6, 9, 12 and 15 years were drawn in Kuopio and Jyväskylä. The total numbers of subjects examined were 550, 1198 and 1530 in 1992, 1995 and 1998, respectively. Calibrated dentists registered caries clinically and radiographically. No indication of an increasing trend in caries frequency could be found in the previously fluoridated town between 1992 and 1998. In both towns the mean dmfs and DMFS values either decreased or remained about the same during the observation period. Mean DMFS values for 12-year-olds were 1.88 and 1.94 in Kuopio and 2.99 and 1.24 in Jyväskylä in 1992 and 1998, respectively. The decreasing trend was statistically significant for dmfs values of 9-year-olds in Kuopio and for DMFS values of 15-year-olds in Jyväskylä. When all study years and both towns were pooled, 25% of the 12- and 15-year-olds with the highest DMFS counts accounted for 79% and 67%, respectively, of all affected surfaces. There was no consistent change in the pattern of caries distribution in permanent teeth during observation period, except for 15-year-olds in Jyväskylä, among whom the distribution of caries became more polarized. In conclusion, there was no indication of an increase in caries frequency in the previously fluoridated town. This study was partly funded by the Yrjö Jahansson Foundation.

39 Title **Fluoride application with increased intensity in different caries risk groups**
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This study was designed to evaluate some of the intermediate data from an oral health program being conducted on 3000 primary schoolchildren in which different fluoride regimens are being applied according to caries risk grouping, along with other preventive measures. Data were collected from one control and two experimental towns, which were chosen by cluster sampling, during the 3rd year of the study. There were 445 and 67 11 year-old children in experimental and control groups respectively. Children were divided into four caries risk categories namely; low, medium, high and very high depending on the severity ratings of baseline caries and which were not statistically different in both groups (Chi-square test). All of the experimental group used 0.2% NaF rinse weekly and brushed with the same fluoridated toothpaste once daily at school under teachers' observation. Children in high and very high risk groups also brushed with 1.1% NaF gel three times a year under researchers' observation. Cumulative Incidence Rate (CIR) was determined to assess the effectiveness of fluoride applications and the results were statistically evaluated using Student's t-test. Low risk groups were not evaluated statistically because of dropouts. CIR (Surface) values were 4.08, 5.64 and 3.57 in medium, high and very high control group while corresponding figures were 2.6, 2.8 and 2.3 in experimental groups. The reductions were significant only in medium and high risk groups (which composed of 75% of the study population) $P < 0.05$ and not significant in very high risk groups (Mann-Whitney U). The results suggest that gel applications should be more frequently applied in very high risk groups. It is concluded that fluoride-using strategies should be increased intensively in accordance with increased risk grouping. This study was funded by WHO (partly), Banat and Colgate.

Title **Effectiveness of an oral health education intervention for Pakistani mothers**
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The present study aimed to assess the effectiveness of an oral health education intervention in changing reported oral health related practices & reducing dental caries experience (dmft) amongst 3 year old Pakistani Muslim infants in Bradford, UK. Higher caries experience among Pakistani muslim infants has been significantly associated with (a) giving infants a bottle to take to bed at night, (b) giving infant drinks other than milk or water from a feeding bottle & (c) mothers own non-attendance at the dentist (Godson, J, Williams, S, Community Dent.Health 1996; 13: 27-33). The intervention planned to address these specific practices. Mothers (N=166) were recruited to the study at a large hospital Maternity Unit & randomly allocated to Test (N=84) or Control (N=82) groups. Only the Test group was given (a) specific advice in mother tongue relating to infant feeding practices & (b) a voucher to encourage dental attendance. All mothers were interviewed about infant feeding practices & dental attendance when their infant was 6 months old & a dental examination was carried out when the children (N=73) were 3 years old. Of the 154 mothers who bottle fed, those 78 in the Test Group were less likely to give their child a bottle in bed at night ($P<0.01$) or provide other drinks from the bottle ($P<0.01$). However 3 year old children of test group mothers (N=38) had nominally higher levels of dental decay than those of control group mothers (N=35) but this difference was not statistically significant (dmft test 2.97; control 1.89; $P=0.27$). Oral health advice given in mother tongue relating to specific infant feeding practices was effective in changing reported behaviour but did not favourably influence subsequent levels of dental disease in 3 year old children. Supported by Bradford Health Authority.

Title **A preventive or restorative approach for high caries risk children**
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In Scotland, 62% of 5 year old children from more wealthy households are caries free compared to only 19% from poor households. Over 85% of dentists work in general practice and children from poorer families often present with symptoms in the late stages of disease. Therefore the community dental service is examining its role in prevention and care for these children. Since areas of deprivation can be defined, school-based programmes have the advantage of accurate targeting and reduce attendance barriers. The Tayside Brushing Study was recently completed. This school-based toothbrushing programme was conducted for 2 years starting with 5 year olds. This resulted in a 56% reduction in dentinal caries of first permanent molars (mean 0.21 D3FS, clinical + FOTI for intervention group v. mean 0.48 D3FS for control group). Local mothers were trained and employed for 1 hour a day on school days and children were given a fluoridated, chalk-based toothpaste and brushes for home use with regular incentives for brushing. Costs per 100 children per school week were approximately 230 Euros. However, much of these costs were paying supervisors and, if a rota of volunteer parents were used, costs reduce to 90 Euros. Comparable costs for a fissure sealing programme would be 70 Euros. If children attended a general dental practitioner for restorations as needed, it would cost the least. However, the latter option is less effective in this community and has little impact on prevention. Furthermore, fillings may need to be replaced on several occasions over a period of years resulting in a further loss of tooth substance. Therefore, giving the tools for regular daily toothbrushing is effective, least traumatic and puts

prevention in the hands of those most at risk. The Tayside Brushing Study was supported by Unilever Dental Research.

- Title **A preventive dentistry plan in the National Health Service (ASL Latina, Italy)**
- 42 F OCCIPITE D I PRISCO, P L LUCCHESI, E GIUSTIZIERI, L
Author CIUCHINI, O CAPONERA, M AGOSTINI.
 Regione Lazio, Working Group for Dental Health, Italy

This study reports a massive preventive program on dental caries, planned on reaching young people (age 3-8 years). This planned program was developed by the ASL Latina-Southern District (Lazio, Italy), over a period of eight years, for the entire child population in the area, i.e. about 6,000 children. A working party, was led by a dentist and included a teacher, three professional nurses and three volunteer dentists. Before starting the program the presence of fluoride in the water was assessed. The teachers of nine school areas were shown how to participate in the preventive program. These teachers provided the children, with tablets of sodium fluoride on a school-day basis. They also instructed the children on correct diet and oral hygiene. Every year all eight year-old children received a questionnaire, the aim of which was to verify what they had learned during the program. They also had a dental check-up and individual instructions on oral hygiene. The program enabled participation by children who would not otherwise have been able to visit a dentist for economic and social family reasons. 30% of eight year-old children had never had a dental check-up. The baseline DMFT value was 3.45 and after four years it decreased to 3.15, with a significant reduction of carious teeth in favour of filled teeth: caries-free mouths increased from 2% to 37%. For systematic administration of fluoride it seems that fluoride tablets represent the cheapest way to supplement children's diet. School is the best place to reach all children, regardless of their family situation.

- Title **A retrospective study of the quality of periodontal referral letters**
- 43 K EATON*, J FURNISS, R SNOAD, H NEWMAN.
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The objectives of this study were to assess the quality of referral letters sent to a specialist periodontist working in the Community Dental Service (CDS) during a 9 month period and to compare the results with a parallel hospital-based study. The assessors for both studies trained for intra- and inter-examiner reproducibility in the use of the Categorisation System for Periodontal Referral Quality (CSPRQ) (Snoad RJ et al. BDJ 1999; 187: 42-46). All referral letters received by the CDS specialist during the nine month period were assessed using the CSPRQ and the year and country of qualification of each referring dentist ascertained from the UK Dentists register. A Chi-squared test was applied to the results from each study. Before the studies commenced the assessors achieved 100% inter-examiner reproducibility when applying the CSPRQ. A total of 114 letters were received by the CDS specialist, six of which were excluded. Of the remaining 108, 38 were categorised as of an acceptable standard. There were differences in the performance of dentists from different age groups in that 56% of letters from those qualified from 10 to 20 years, 29% of those from dentists qualified < 10 years and 27% of those qualified > 20 years were of an acceptable standard. The results were broadly similar to those of the parallel hospital study except that there was a statistically significant difference ($P < 0.05$) between the quality of referrals from dentists qualified between 10 and 20 years and those with non-UK primary qualifications. It was concluded that the overall quality of

referral letters in this study was poor and that the CSPRQ provided a highly reproducible technique for assessing the quality of periodontal referral letters.

- 44 Title **Human PDL fibroblasts adhesion to a periodontally involved root surfaces in smokers (SEM Study)**
Author A Y GAMAL* , M M BAYOMY.
Faculty of Dental Medicine, El Azhar University, Cairo, Egypt

The present study was conducted to evaluate the attachment of human periodontal ligament fibroblasts to periodontally diseased root surfaces of smokers following scaling and root planing. During the last two decades a great number of epidemiological studies have suggested that smoking is one of the most important significant risk factors for the development and progression of periodontitis (Martinez-C.P., Lorca A., Magan, R. J. Clin. Periodontol. 1995; 22: 743). Thirty-five segments were obtained from periodontally involved teeth. These segments were classified into 5 groups (7 segments each) obtained from patients with different levels of cigarette consumption together with a control group of non-smokers. PDL cells were cultured from healthy PDL on these segments for 24 hours. They were prepared for SEM viewing, photographing and counting at X750 in a standard area. The results of this study indicated that smoker's segments, which were extracted one week following scaling and root planing, revealed the most significant reduction of PDL cells attachment followed by the group extracted lately from non-smokers. On the other hand the immediately extracted teeth from smokers and non-smokers showed no significant differences regarding PDL cell attachment. In conclusion the present results suggested that cigarette smoking compromise the periodontal treatment response following scaling and root planing. However, the removal of local irritants including tobacco products could be successfully removed by mechanical therapy.

- 45 Title **An assessment of the periodontal status of disabled children**
Author L ZOITOPOULOS*, C TAYLOR, K BARNARD, M ALHUWALIA, H BEMBRIDGE, P LISOWSKA.
GKT Dental Institute, King's College London, UK

This study was designed to identify the oral health needs of disabled children in Lambeth, Southwark and Lewisham (SE London. Gingival health is usually worse in physically and mentally disabled children (Nunn J H. Comm. Dent. Health 1987; 4: 157-68). A random sample of 300, which gave 210 children (127 female, 83 male, age range 5-18 years) with varying degrees of disability was taken from special schools. Oral examinations were conducted using standardised criteria to assess oral health and treatment need. A behavioural assessment of the children was made using a simple scoring system to ascertain compliance. The data were analysed with Dental Surveyplus 2. Twenty eight per cent of the children had untreated caries; 20% had sustained dental trauma; 72% had some plaque and the average plaque score per child was 10.1 (scores for each tooth of 0,1,2 with a maximum of 16 teeth examined per child); 17% had calculus. 67% of the children required treatment; 35% needed fillings; 48% oral hygiene instruction and 15% scaling and polishing. Of those children requiring oral hygiene instruction only, 44% could co-operate fully, 22% with a small degree of persuasion, 28% with a greater degree of persuasion and 6% would refuse after a time. A similar finding was demonstrated for those children requiring oral hygiene instruction and scaling and polishing only. It could be argued that the higher levels of plaque amongst those children with greater compliance could be attributed to the children cleaning their own teeth with less supervision, whilst those who were less compliant may have the assistance of a parent or carer. It is concluded that there are higher levels of plaque in disabled children with greater compliance. In addition, assessment of compliance is a useful tool when planning the service provision for

these children.

Title **Periodontal status and candidal carriage in insulin dependant diabetic adolescents**
46
Author M M BAYOUMI*.
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The aim of the study was to investigate the periodontal status and its correlation with candida colonization in the insulin diabetic adolescents (Darwazch AMG, MacFarlane TW, Mc Cuish Alamey P.J., J. Oral Pathol. Med. 1991; 20: 280.3). Twenty diabetic patients with adult periodontitis and ten healthy subjects were investigated for periodontal status (plaque index, gingival index, and attachment loss), blood glucose level, and subgingival candidal count. The findings of the study indicated that the gingival and plaque indices scores and the attachment loss were higher in diabetic compared to the healthy control. Subgingival candidal counts were higher in the diabetic patients compared to the healthy controls. There was a positive correlation between plaque, gingival indices scores and attachment loss with the blood glucose level and subgingival candidal counts in diabetic patients. These data indicated that subgingival candidal counts may be considered as a risk factor for periodontal disease in diabetic patients when blood glucose level is elevated.

Other

Title **Urinary fluoride excretion of children from six European study sites**
47
Author C E KETLEY* (University of Liverpool, UK), J COCHRAN (Cork), P HOLBROOK (Iceland), L SANCHES (Portugal), C VAN LOVEREN (The Netherlands), A-M OILA (Finland), D O'MULLANE (Cork)

The objective of the study was to compare 24-hour urinary fluoride excretion and absorption in children aged 1.5 to 3.5 years from six different European study sites. Twenty-four hour urine samples were collected from 1.8-4.2-year old children (n=86) who were already participating in the Biomed II study. Samples were collected from Cork, Ireland (n=19) where the water is fluoridated to a concentration between 0.8-1.0 ppm; Knowsley, England, where the water fluoride concentration is <0.1 ppm (n=18); Oulu, Finland (n=18), water fluoride concentration <0.01 ppm; Reykjavik, Iceland (n=4), water fluoride concentration 0.05 ppm; Haarlem, Netherlands (n=6), water fluoride concentration 0.12-0.13 ppm; and Almada/Setubal, Portugal (n=21), water fluoride concentration 0.08 ppm. The volume of the samples was measured, they were analysed for fluoride concentration and the 24-hour urinary fluoride excretion was calculated. It was found that the mean fluoride excretion in response to usual conditions of fluoride intake in these children was 0.23 mg (\pm 0.19) in the non-fluoridated areas and 0.37 mg (\pm 0.11) in the fluoridated area. The daily fluoride excretion and estimated daily fluoride absorption in these children appeared to be within recommended limits. This study was funded by a European Union Biomed II Grant.

Title **A transcultural comparison of the use of local anaesthesia during dental procedures among dental students in Hong Kong and Leeds**
48
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This study investigates the use of local anaesthesia (LA) during dental procedures among dental undergraduates in Hong Kong (HK) and Leeds (UK). Previous research has shown that Finnish dentists were less likely to administer LA during restorative treatment than their American counterparts (Murtomaa et al, 1996; Int. J. Paed. Dent. 6: 25-30). However, research investigating the use of LA between different populations with contrasting cultures is still limited. A piloted structured self-administered questionnaire was distributed to a random sample of 60 dental undergraduates (30 HK, 30UK) between April and August 1999. All questionnaires were returned (100% response rate). For each dental procedure, a higher proportion of the UK undergraduates performed LA more routinely than their HK peers (Class I amalgam 100%UK V 80%HK, $P < 0.01$; MC/FVGC prep 97% V 73%, $P < 0.05$; rubber dam placement 80% V 67%; PRR 70% V 63%; simple extractions 100% V 97%). Regarding the quantity of LA solution used, the majority of subjects in both schools used one or less than one cartridge each time, with a higher quantity used in the mandible. However, a higher proportion of HK students consumed more than one cartridge for each procedure (Class I amalgam 3%UK V 30% HK; MC/FVGC prep 13% V 27%; rubber dam placement 1% V 6%; PRR 0%V10%), except for simple tooth extractions (80%UK V 67%HK). It is concluded that, despite similar dental curricula in both schools, a higher proportion of UK dental undergraduates administered LA during dental procedures more routinely than their HK counterparts. However, with the exception of simple tooth extractions, the HK subjects consumed more LA solution than the UK students.

49 Title **Fluoride intake in infants in the Czech Republic; food sources, additives, toothpastes**
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The study was aimed at ascertaining the intake of fluorides in early childhood. Fluoride content in breast milk, bottled waters recommended for infants, instant milk formulas and toothpastes for children available in the Czech Republic was analyzed. Based on the results and on nutritional schemes the probable daily intake of fluorides was calculated, related to the infants' ages. The fluoride concentration in breast milk of mothers living in Prague amounted to 0.08-0.05 ppm F. The fluoride content in three bottled waters for infants and in other bottled waters ranged from 0.031 to 0.103 ppm F- and from 0.126 to 0.710 ppm F- respectively. Instant milk products, produced by HEINZ-PMV, NUTRICIA or NESTLÉ, contained on the average 0.12-0.46 ppm F-, calculated as diluted in fluoride-free water. The calculated average daily intake of fluorides in infants fully or partially fed by instant milk formulas and beverages prepared from bottled waters for infants thus amounted to 0.015-0.295 mg F- per day in the first six months of life and 0.065-0.650 mg F- between the sixth and the twelfth month of age. At the age of 2 years approximately 20% of children were given fluoride tablets, prescribed mostly by pediatricians. In two thirds of children, mothers started oral hygiene practices by means of fluoride toothpastes. Fluoride content of locally available toothpastes for children ranged from 250 to 1180 ppm, Czech products being in the upper part of this range. Clear and understandable recommendations for mothers as to the fluoride intake from drinks, additives and toothpastes are thus urgently necessary to assure optimal intake and to prevent fluoride overdosage. Supported by the institutional grant IDR for 1999-2003, IGA, Min. of Health, Czech Republic.

Title **Use and interpretation of a medical questionnaire for dental**

patients**50**

Author

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The necessity for identification of medical "at risk" patients by routine pre-treatment medical history taking is well known and accepted by dental practitioners. The methods of determination of physical status in order to evaluate this risk and the consequent management of patients seems to be more difficult. At the present time, the methodology of the medical evaluation and risk to patients is usually based on the ASA (American Society of Anaesthesiologists) classification. The aim of this study was to determine if the questionnaire used at the dental hospital of Reims allowed the assessment of the medical risk of the patients, according to the ASA classification. Assessments obtained by dental students/teachers were compared to those obtained by two dental referees and two medical referees (anaesthetists). 500 completed questionnaires were randomly selected from among those of dental patients at the hospital. For each patient, the ASA classification was determined from the questionnaire by the referees and was compared to that obtained by the dental practitioners. The agreement between the ASA scores obtained by the different groups was assessed by a Cohen's Kappa statistical test. The results showed large variations between the groups. The anaesthetists showed a significant agreement between their evaluations ($K=0.6992$). The dental referees assessed the medical risk more severely than the anaesthetists ($K=0.2720$ and $K=0.3220$). The dental students/teachers underestimated the risk as compared with the two dental referees. It was observed that the dental practitioners took into account the cumulated risks factors whereas the anaesthetists considered only the global risk to assess the ASA score of the patients. It appeared that the use of the ASA classification was not sufficiently standardised. Calibration and training appeared to be necessary.

Title

Performance of OHQoL-UK© in Syria, Egypt and Saudi Arabia**51**

Author

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The aim of this study was to evaluate the performance of an oral health related quality of life measure - an Arabic version of OHQoL-UK© in three middle eastern countries; Syria, Egypt and Saudi Arabia. Following forward and backwards translation of OHQoL-UK© into Arabic and pilot testing the Arabic version among a focus group. A questionnaire containing the instrument was administered to 1,000 adults from the three Arab countries. In addition, the study participants were interviewed about their oral health status, experience of oral health problems in the past year, self-rating of oral health and also socio-demographic information was collected. Among the three study populations, variations in OHQoL-UK© scores were apparent in relation to socio-demographic factors ($P<0.01$), self-reported number of teeth possessed ($P<0.001$) and experience of oral health problems in the past year ($P<0.01$) which supports the construct validity of the instrument. Furthermore, variations in OHQoL-UK© scores were apparent in relation to self rating of oral health status ($P<0.01$) which supports the criterion validity of the measure. The internal reliability of the instrument was high in the three groups with Cronbach alpha values of above 0.90, indicating good internal consistency. The Arabic version of OHQoL-UK©, an index of oral health related quality of life demonstrated satisfactory construct validity, criterion validity and internal reliability in Syria, Egypt and Saudi Arabia. This provides further evidence of the instrument's psychometric properties and it's cross cultural use.

Title	Development and implementation of a fluoridation plant Code of Practice
52	
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During a review of the Fluoridation of Public Water Supplies Regulation 1964, it became apparent that operational practices varied considerably between the communities, and the need for a statewide standard which reflected best practice in Australia and overseas was identified. Only 5 percent of the Queensland population benefits from optimally fluoridated public water supplies, compared with about 70 percent in most other States and Territories in Australia (Spencer A J, Slade G D, Davies M, Community Dent. Health 1996; 13 (Suppl. 2): 27-37). Four of the six communities lie in the tropics and, apart from Townsville which has a population of over 100,000, all have populations of less than 10,000 and are fairly isolated. The first fluoridation plants were installed in 1964, and no new plants been established since 1972 (Commonwealth Department of Health. Canberra: AGPS, 1983). To ensure that the Code of Practice would be accepted by local governments, extensive consultation was undertaken during its preparation. Workshops were held at each plant prior to publication of the Code of Practice in January 2000, enabling plant operators and personnel to participate in the identification of problems and the development of solutions. Subsequent feedback indicates that considerable progress has been made in implementing the recommendations of the workshop team. It is concluded that the Code of Practice has been a valuable tool in improving the quality of the operation of fluoridation plants in Queensland.