The third national conference on dental hygiene research in Sweden

The third national conference on dental hygiene in Sweden was held at Dalarna University Department of Health and Social Sciences in March 2004. Agneta Ekman, who is the Minister of Hand Welfare in Sweden, gave the opening speech. She emphasized the importance of dental hygiene research and was impressed about the progress the dental hygienists profession has made in Sweden. She expressed her support for further development and encouraged the profession to organize future research conferences and even make them better known to the dental profession.

Four doctoral students and three doctors presented their research. The audience participated lively in the discussions. The concluding remarks were made by Yvonne Nyblom who is the Vice President in the Swedish Dental Hygienists Association and a delegate from Sweden in IFDH.

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Enclosed you will find some of the abstracts:

Infrared fluorescence measurements – The influence of calibration frequency on longitudinal *in vitro* measurements with KaVo DIAGNOdentTM

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With today's widespread use of fluoride, the nature of cavities has changed. Harder, and therefore more resistant enamel can many times conceal subsurface decay and the caries disease progresses, in many cases, for a prolonged period with low activity and slow progression. The change in pattern of the caries disease calls for a shift in treatment philosophy; the original maxim of 'extension for prevention' has been eschewed for a minimal intervention approach, although this approach is only effective if caries is diagnosed at an early stage. Incorrect diagnosis results in incorrect treatment decisions. In the current age of lower overall prevalence of decay and slow disease progression, the potential risk of unnecessary restorations is greater than the risk of missing early decay. As an adjunct to conventional caries diagnostic methods such as visual inspection and bitewing radiography, a need for objective quantitative detection methods is of high importance.

KaVo DIAGNOdentTM (KaVo Dental, Biberach, Germany) is a laser fluorescence device developed for caries detection and quantification as an adjunct to visual inspection and radiographic examination. The aim of this *in vitro* study was to investigate the stability of the instrument for longitudinal measurements. The study was carried out in two subsequent parts where measurements were performed in two series, with and without calibration. The material in Part I of the study comprised 30 extracted teeth with various stages of carious lesions measured with one DIAGNOdentTM device. In Part II, two devices were used to determine their unanimity and measurements were performed on six fluorescence standards in order to minimize false positive readings.

The first series in Part I, with only one initial calibration, showed a significant change over time: a linear trend with drifting towards lower readings (P < 0.001). In the second series, with frequent calibrations, no significant linear trend over time could be demonstrated (P = 0.09). Clinically relevant differences in mean value between the series of measurements were seen over time (without frequent calibration, 7.64; with frequent calibration 8.57). The mean value of readings from the series with frequent calibrations was approximately 1 unit higher throughout the study, and single observations were 1–6 units higher.

Results from Part II showed a significant systematic overtime difference between the factor 'without' and 'with' calibration (P = 0.0023) independent of which device that was used (P = 0.67). There was no significant difference between the devices, DDI and DDII (P = 0.14). The interaction, time × calibration, was significant (P < 0.000) with stable readings over time in the period 'with calibration', while the readings in the period 'without calibration' was drifting towards lower readings from day 1 and forward. From this *in vitro* study it was concluded that frequent calibration of DIAGNOdentTM should be performed in order to obtain comparable data for longitudinal monitoring.

Key words: infrared; laser; fluorescence; calibration; DIAGNO-dent $^{\rm TM}$

Perceived oral health: changes over 5 years in one Swedish age-cohort

Ståhlnacke K, Söderfeldt B, Unell L, Halling A, Axtelius B Community Dentistry and Oral Epidemiology. 2003;31:292-9 Objective: The purpose of this study was to investigate if a change in the social gradients in perceived oral health occurred over a 5-year period, 1992-1997, using a cohort population from two Swedish counties. Methods: In 1992, a cross-sectional mail questionnaire was sent to all 50-year-old persons in two counties in Sweden, Örebro and Östergötland, and altogether there were 8888 persons. In 1997, the same population was sent a new questionnaire. The cohort, comprising the same respondents from 1992 and 1997, was of 5363 persons. An index of perceived oral health was constructed out of three questionnaire variables: satisfaction with teeth, chewing ability and the number of remaining teeth. This index value was set as a dependent variable in a regression model. Reports of toothache were investigated in a separate logistic regression model. Results: There were obvious social gradients in the perceived oral health index both in 1992 and in 1997. Marital status, foreign birth, education and occupation were all substantially related to the perceived oral health. The change in perceived oral health was analysed. Almost half of the cohort (47.4%) showed no change at all. Those with increased and those with decreased health were rather evenly distributed on both sides, with 22.0% with better health in 1997 and 30.6% with worse health. Gender and education were related to toothache experience. Conclusion: Changes have been moderate in the perceived oral health in this cohort, despite the rather drastic changes in the remuneration of dental care during this study time. However, this also means that the social differences remain, despite the official goals of increased equity.

Lactobacillus species in supragingival plaque in subjects with hyposalivation

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The aim was to analyse frequency and proportion of Lactobacillus species in supragingival plaque in subjects with hyposalivation and the Lactobacillus species ability to ferment sucrose, mannitol, sorbitol and xylitol. Material and methods: Ten subjects treated with radiation therapy (RT), 10 subjects with primary Sjögren's syndrome (pSS), and matched controls were included. Supragingival plaque was collected interproximally 12-13 and 15-16 and analysed using cultivation technique. Lactobacillus colonies were randomly selected and stored at -70°C. The Lactobacillus strains fermentation pattern was analysed using basal medium with 1% of respective carbohydrate/sugar alcohol added. Results: Lactobacilli were more frequent at site 15-16 than at site 12-13. Lactobacilli were about twice as frequent in the pSS and RT groups than in their respective control group. For those harbouring lactobacilli, the proportion of the total count at site 15–16 was $13 \pm 27\%$ for the RT group and $0.003 \pm 0.003\%$ for their controls, $3.2 \pm 5.8\%$ for the pSS group and $0.06 \pm 0.2\%$ for their controls. We have further analysed 28 of 114 collected Lactobacillus strains. All strains gave a pH <6.0 and at 95% a pH <5.5 at sucrose fermentation. Mannitol could be fermented by 82% of the strains, sorbitol by 75% and xylitol by 64%. A pH <5.5 was obtained for 82% of the strains with mannitol, 75% with sorbitol and 32% with xylitol. Conclusion: Subjects with hyposalivation have a marked increase in lactobacilli. Of the strains analysed this far 95% gave a pH <5.5 at sucrose-fermentation. A pH <5.5 was obtained for 82% of the strains with mannitol, 75% with sorbitol and 32% with xylitol. As those sugar substitutes are included in tooth pastes, chewing gums and salivastimulating tablets and sprays, it is likely that the lactobacilli are further promoted in subjects with hyposalivation.

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