Title	Efficiency of an outreach dental service in Hong Kong
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Citation	The 17th Annual Scientific Meeting of the International Association for Dental Research (Southeast Asian Division), Hong Kong, China, 18-20 September 2002. In Journal of Dental Research, 2003, v. 82 Sp Iss C, p. C-637, abstract no. 31
Issued Date	2003
URL	http://hdl.handle.net/10722/53711
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28 **Raman spectroscopic study of non-carious cervical lesions.** R SAKOOLNAMARKA*[1], MF BURROW[2], S PRAWER[3], MJ TYAS[2] ([1]Chulalongkorn University, Faculty of Dentistry; The University of Melbourne, [2]School of Dental Science and [3]School of Physics)

This study was to investigate the inorganic part of normal dentine and dentine from non-carious cervical lesions (NCCLs) prior to and following acid conditioning using two different acids (phosphoric acid and polyacrylic acid). Ten premolars with NCCLs and four human third molars (control) were used. Positive replicas of NCCLs were prepared and examined using scanning electron microscopy. The surfaces of four NCCLs were analysed using Raman spectroscopy. The teeth were then sectioned ongitudinally through the lesions, and Raman spectra of the sectioned surfaces were recorded from halfway between the surface of the NCCL towards the pulp and adjacent to the pulp. Dentine discs were obtained from the four human third molars and Raman spectra were again recorded. The dentine discs were sectioned in order to obtain two specimens from each disc. One half of the discs and one half of the sectioned NCCLs were treated with 35% phosphoric acid, and the remaining specimens were treated with 20% polyacrylic acid/3% aluminium chloride. Raman spectra of all specimens were obtained. The area under phosphate 1 of the dentine spectrum was computed in order to obtain a ratio with the area under the second order spectrum of a silicon phonon that was used as a comparative standard. The mean phosphate 1 and silicon phonon ratios from normal dentine and NCCLs were calculated and compared using the general linear model with repeated measurement and Tukey's pairwise tests. The mean ratios from different locations of the NCCLs were compared using one-way ANOVA and Tukey's pairwise tests. The micrographs of NCCLs showed that the surfaces varied from relatively smooth with no dentinal tubule openings to surfaces where dentinal tubules were occluded with deposits showing as projections. The mean phosphate 1 and silicon phonon ratios obtained for NCCLs were higher than those of normal dentine in all treatment groups ($p<0.05$). The ratios from the untreated specimens were higher than those of the polyacrylic acid treated specimens, and those for the phosphoric acid treated group were the lowest ($p<0.05$). The ratios obtained for the surfaces of NCCLs were higher than those halfway towards the pulp, and those adjacent to the pulp were the lowest ($p<0.05$). In conclusion, The inorganic part on the surface of NCCLs may influence acid conditioning, which may affect the bonding of resin-based adhesive to such dentine. Supported by the Australian Dental Research Foundation Inc., St Leonards, NSW 2065.

29 **ART sealants in Chinese schoolchildren — six-year results.** HOLMGREN CJ[1]*, LO ECM[1], HU DY[2], WAN HC[2] ([1]Faculty of Dentistry, University of Hong Kong, Hong Kong; [2]Dept. of Preventive Dentistry, Sichuan University, Chengdu)

The objective was to evaluate longitudinally ART sealants placed in Chinese school children under field conditions. 191 ART sealants were placed in 140 children, aged 11-14 years, by five dentists in four secondary schools in Deyang, Sichuan Province, China. Teeth selected for sealing were those with pits and fissures that were deep or showing early enamel caries. Teeth were excluded if there was obvious cavitation extending into the dentine. Standard instruments and procedures for ART sealants were used. The material used was a high-strength glass-ionomer (Ketac-Molar, 3MESPE) that was inserted into the pits and fissures with the press-finger technique. The status of the sealants was evaluated annually over 6 years after placement by the same examiner who had not been involved in the placement of the restorations using explorers, mouth-mirrors and an intra-oral fibre-optic light. No missing sealants were replaced during the study. Because of subject attrition only 107 sealants (56% of the original) were examined after 6 years. The cumulative survival rates of the sealants (partially or fully retained) after 2, 4 and 6 years were 79%, 68% and 59% respectively. Caries prevention lagged the fall in sealant survival but remained high throughout the study period, being over 90% in the first 4 years and 85% after 6 years. ART sealants placed under field conditions in Chinese schoolchildren have a high retention rate. Missing sealants should be replaced to maintain their preventive efficacy. This study was supported by 3MESPE.

30 **Contrast ratio and color difference of Procera veneers over different backgrounds.** FCS CHU*, ASK SHAM, HWK LUK, B ANDERSSON, J CHAI and TW CHOW (Faculty of Dentistry, The University of Hong Kong, China, SIM/Prosthetic Dentistry, Specialist Dental Service, Molndal, SWEDEN)

Previous laboratory studies reported that porcelain veneers with high-density alumina cores were color stable with little color changes when placed over white or stained backgrounds. By measuring the luminance (Y) over white and black backgrounds for their contrast ratio (C.R.), these high-density alumina cores were also found to be the least translucent (with highest C.R) when compared with cores of other porcelain systems. Objectives: To investigate the relationship between color difference ($\Delta E1$) of porcelain veneers with different contrast ratios (C.R.) over different backgrounds, and determine the critical C.R. above which the color difference is clinically insignificant (when ΔE is ≤ 5). The *in vivo* color difference ($\Delta E2$) of the veneers when bonded to discolored teeth was also measured. Materials and methods: Forty-four maxillary anterior teeth with severe tetracycline discoloration were prepared for veneers with high-density alumina cores. The cores had a thickness of 0.25mm and all the veneers were made to shade A2. The color (L*a*b) and luminance (Y) of the mid-buccal region of each veneer was measured over white and black backgrounds under artificial daylight (65K) using a colorimeter (Model CS-100, Minolta, Japan). The color of bonded veneers was measured one week after bonding. Results: The color difference ($\Delta E1$) of veneers over white and black backgrounds was 0.6 ± 2.6. The mean of C.R. was 0.75 ± 0.1. Correlation between $\Delta E1$ and C.R. was statistically highly significant (Pearson correlation coefficient = -0.91, $P<0.0001$, R^2 =0.88). The critical C.R. was 0.91. The color difference ($\Delta E2$) of veneers over white background and after bonded to discolored teeth was 11.6 ± 5.5. Paired t-test showed that there was no statistically significant difference between $\Delta E1$ and $\Delta E2$. Conclusions: The higher the contrast ratio, the smaller the color difference of the veneer experienced when the background was changed from white to black. The color of veneers made in this study with 0.25mm thick high-density alumina cores was affected by the underlying discolored teeth. (This study was sponsored by Nobel Biocare, Sweden.)

31 **Efficiency of an outreach dental service in Hong Kong.** ECM LO, Y LUO*, JE DYSON (Faculty of Dentistry, University of Hong Kong)

In 1998, an outreach dental service funded by a charitable trust was established to care for special needs groups in Hong Kong. The purpose of this presentation was to describe the efficiency of the outreach unit in providing oral health care services to the disadvantaged groups. The salaried staff of the outreach dental team comprised two half-time dentists, a chairside assistant and a clerk. Portable dental equipment was transported to various institutions where a room was used as a temporary dental clinic. Basic dental care including prevention, sealing, restoration, extraction and denture repair was provided free of charge. Oral health education was provided to the staff and all persons in the institutions. Institutionalised elderly were the main service recipients of this project, while other people with special needs, including the physically disabled, the mentally retarded or people undergoing rehabilitation were also reached. It was found that around one-third of the subjects had dental pain or sensitivity, and around 70% of them had not visited a dentist for at least 3 years. In the past 4 years, dental care was provided to 6,867 patients, of which 85% were elderly people living in elderly homes or attending day care centres. In total, preventive treatment was provided to 3,002 patients, sealing and tooth cleaning was done on 988 persons, 2,690 teeth were filled, 2,362 teeth were extracted, 613 dentures were repaired and 55 new dentures were delivered. Feedback from the patients showed that over 90% of them were very satisfied or satisfied with the outreach dental service. These findings indicate that the special needs groups in Hong Kong are in urgent need of dental care and that an outreach dental service can provide the needed care very efficiently. (Supported by the S.K. Yee Medical Foundation)

32 **CD14 Expression Profile in Advanced Chronic Periodontitis.** L REN*, LJ JIN, WK LEUNG (Faculty of Dentistry, University of Hong Kong, Hong Kong)

The pathogenesis of periodontitis is characterized by bacterial LPS activation of host response leading to production of proinflammatory cytokines and inflammatory mediators from various host cells, and such process often involves the LPS-CD14 cell stimulation pathway. This study was to investigate the expression profile of CD14 in periodontal pocket tissues (PoT) and inflamed connective tissues from the base of pocket (ICT) in chronic periodontitis. Soft tissue biopsies were collected from 14 patients with advanced chronic periodontitis during periodontal surgery in unresolved periodontitis sites following non-surgical treatment. The samples included 12 PoTs and 11 ICTs and 3 gingival tissue specimens that were obtained from the adjacent non-pocket sites, *i.e.* clinically healthy tissue (HT). CD14 was detected by a semi-quantitative immunohistochemistry method. The samples were also H&E stained for morphometric analysis. CD14 was detected in all ICTs, while varying greatly in the ratio of stained positive cells (PC) to total area (13.31 ± 4.93, 0.07-49.70 cells/μm^2) and in the proportion of PC to stained area (0.34 ± 0.10, 0.05-1.00 cells/μm^2). CD14 was found in 11/12 PoT samples and all 3 HTs. CD14 expression was mainly confined to the interface where pocket epithelium met connective tissue. No significant difference was found in CD14 expression measured in % of PC-on-interface to the whole PC between PoTs (64.51 ± 14.11%) and HTs (62.66 ± 7.54 %). It is concluded that CD14 was frequently detected in unresolved chronic periodontitis, with varying expressions in inflamed connective tissue from the base of periodontal pockets; while in periodontal pocket tissues, CD14 expression was mainly confined at the pocket epithelium connective tissue interface. Supported by the Hong Kong Research Grant Council, Grant HKU 7310/00M.

33 **Students' satisfaction and utilization of dental service in Hong Kong.** *CHAN HC and CHU CH (Faculty of Dentistry, University of Hong Kong, Hong Kong)

Objectives: The objectives of this study was to investigate university students' utilization of and satisfaction with the dental care service provided by their university in Hong Kong. Method: A questionnaire survey was conducted on 200 students in each of the seven universities in Hong Kong through a face-to-face interview in the university campus. Questions on different aspects of the dental service, including the technical skills of dentists, accessibility of the clinics, scope of service, waiting time, cost, attitude of staff, clinic environment, were asked. Results: A total of 1400 students were surveyed in this study. 951 (68%) students had dental visit after enrollment. The main reasons for the remaining 32% that did not visit any dentist were they did not perceived having any dental problem and they were too busy. 67% of the students who had dental visit used the dental service provided by their universities. Nearly all, 97% of the users were generally satisfied with the dental service provided by their universities. Conclusion: Most of the university students in Hong Kong have visited a dentist after enrollment. The university dental service is the major source of dental care to the student. The vast majority of the students were satisfied with the university dental service.

34 **Orthodontic treatment need and impact of oral health on the life quality of children.** C. McGrath, H.N. PANG and E.C.M. LO (Faculty of Dentistry, University of Hong Kong, Hong Kong SAR, CHINA.)

OBJECTIVES: To identify associations between orthodontic treatment need and impact of oral health on the life quality of children in Hong Kong. METHODS: A random sample of 547 12-year-old Hong Kong children participated in a study of the impact of oral health on life quality and orthodontic treatment need. The impact of oral health on the life quality of the children was assessed using the 36-item Child Oral Health related Quality of Life questionnaire (COHQOL), covering four domains: symptoms, functional limitations, emotional-well-being (EBW) and social-well-being (SWB). Orthodontic treatment need was assessed based on the aesthetic component of Index of Orthodontic Treatment Need (IOTN) - the SCAN scale, and on children's own perceptions of the need for orthodontic treatment. RESULTS: Five hundred and four of assessments were usable (92%, 504/547). Impact of oral health on life quality was immense: most reported one or more oral symptoms (98%, 496/504), functional limitations (82%, 413/504) and that their oral health affected them emotionally (68%, 348/504) and socially (62%, 314/504). Employing the SCAN scale, 84% (424) were graded as having no orthodontic need, 11% (55) of having borderline need and 5% (25) as being in need of orthodontic treatment. However, 27% (138) perceived themselves to be in need of orthodontic treatment. SCAN ratings were associated with children's perceptions of the impact of oral health on life quality, specifically EWB ($P<0.01$) and SWB ($P<0.05$). Children's own perception of the need for orthodontic treatment was more strongly associated with their perceptions of the impact of oral health on life quality. It was associated with symptoms ($P<0.05$), functional limitations ($P<0.01$), EWB ($P<0.001$) and SWB ($P<0.01$). Orthodontic treatment need is associated with the impact oral health has on the life quality of children.