

17 The Assessment of Variables to Identify Children at High Risk of Developing Caries in Mitchells Plain. R.Z. ADAM MRC Intern, University of the Western Cape.

Previous studies have suggested that high levels of cariogenic microorganisms, previous caries experience, Quality of oral hygiene, socioeconomic status and familial patterns are risk factors for caries development (Demers, 1990). The aim of this study was to determine which factors would be a reliable tool in identifying children at high risk of developing caries in the Mitchells Plain area, in the Western Cape, South Africa. 10 creches were randomly selected from a list of registered creches from the Social Services Department. At each creche 10 children aged 48-60 months were randomly selected from the creches register. Parental consent was obtained for the child to participate in the study. The following were recorded: dmft (BASC criteria), gingival index, plaque index, buffer capacity, saliva flow rate, salivary *S. mutans* and lactobacilli. Information regarding the parent's educational level and socioeconomic status were included. The preliminary results are presented in the table below:

	<i>S. mutans</i>		Lactobacilli		Saliva Flow Rate		Buffer Capacity	
	$10^7-10^8/ml$	$>10^8/ml$	$<10^7/ml$	$10^7/ml$	$<0.6 ml/min$	$>0.6 ml/min$	4.5-6	<4
dmft	4.3	8.3	4.5	6.6	6.5	5.2	5.0	8.2
Difference		-4.03		-2.1		1.34		-3.25

Although none of the results are statistically significant they seem to indicate that higher numbers of bacteria correspond to a higher dmft score similarly for a low buffering capacity and a low saliva flow rate.

18 Effect of Tetracyclines on Fibroblast Growth and Proliferation. E. CRAFFORD*, P.J. GERMISHUYS, S.J. BOTHA and A. GROBLER. Department of Periodontology and Oral Medicine & Centre for Stomatological Research, Faculty of Dentistry, University of Pretoria, Pretoria.

Tetracyclines are renowned for their excellent properties in local treatment of periodontal disease. Although research results indicated their further positive effect on cell attachment and stimulation of bone growth, little is known on the cytotoxicity of tetracyclines. This study evaluated the effect of different concentrations ($1300 \mu g/ml^{-1}$ = concentration in sulcus after local administration; $16 \mu g/ml^{-1}$ = concentration in sulcus after systemic administration; $2.5 \mu g/ml^{-1}$ = concentration in serum after systemic administration) of tetracycline hydrochloride (TET), minocycline hydrochloride (MIN) and doxycycline hydrochloride (DOX) on three different cell lines of human gingival fibroblasts. Known cell concentrations were exposed for up to six (6) weeks to media containing the different tetracyclines. All cells immediately died upon contact with $1300 \mu g/ml^{-1}$ of all tetracyclines. All cells that were exposed to both $16 \mu g/ml^{-1}$ MIN and $16 \mu g/ml^{-1}$ DOX gradually died over a prolonged period. Although the concentration of $2.5 \mu g/ml^{-1}$ of DOX and MIN and the $2.5 \mu g/ml^{-1}$ and $16 \mu g/ml^{-1}$ of TET had variable growth inhibitory effects, they did not cause cell death. TET definitely had less cytotoxicity than MIN and DOX.

19 Fine Structure of Pseudopodia-Like-Attachment-Structures of *Lactobacillus paracasei*. S.J. BOTHA* and F.S. BOTHA. Centre for Stomatological Research, Faculty of Dentistry, University of Pretoria, Pretoria.

Pseudopodia-like-attachment-structures (PLAS) of *L. paracasei* is responsible for attachment of these organisms on tooth enamel as well as for attachment of the organisms onto each other. Scanning Electron Microscopy indicated that PLAS originate from the cell surface. The purpose of this study was to determine the exact fine structure of PLAS. *L. paracasei* was cultivated in broth media in tissue culture petri dishes for 24, 48 and 72 hours. The media was removed, surfaces rinsed with phosphate buffered saline to remove unattached cells and the cells on the surface were then fixed by 2.5% glutaraldehyde. The surfaces were treated for electron microscopy and embedded in resin. Thin slices were then cut and examined by Transmission Electron Microscopy. Several thin slices were examined in order to see the fine structures of the PLAS. Results indicated that PLAS are tubes that forms from the surface of the cell and represents very much the normal structure of the cell, which actually really represents replicas of pseudopodia.

20 Effectivity of Soaps for Handwashing, Disinfection of Surfaces and Sterilization of Instruments. A GROBLER*, B.J.P. DE WET and S.J. BOTHA. Centre for Stomatological Research, Faculty of Dentistry, University of Pretoria, Pretoria.

Anti-microbial effectivity of a range of soaps (Sterisafe 201 = surfaces; Sterisafe 101 = instruments; Sterisafe 601 = hands; chlorhexidine-gluconate = standard control) was determined against *Streptococcus mutans*, *Lactobacillus paracasei*, *Mycobacterium tuberculosis*, *Bacillus* and *Candida albicans*. Surfaces, instruments and hands were contaminated with suspensions of the different organisms which equaled a no 1 McFarland standard. Area swabs of the surfaces and instruments were taken to confirm contamination and contaminated hands were impressed onto agar plates. The soaps were then applied according to the specifications of the manufacturers and area swabs of the surfaces and instruments were taken as well as impressions of the hands to determine the reduction in micro flora.

Sterisafe 201 completely eliminated *S. mutans*, *Bacillus* and *C. albicans* from surfaces and although it reduced the numbers of *L. paracasei* and *M. tuberculosis* on surfaces it did not completely inhibited growth. Sterisafe 101 completely eliminated growth of *Bacillus* and *M. tuberculosis* on instruments and although it reduced the numbers of *S. mutans*, *L. paracasei* and *C. albicans* on instruments they were not completely inhibited. Sterisafe 601 completely eliminated *Bacillus* in the handwashing trial and reduced the numbers of all the other organisms, but did not completely inhibited them. Chlorhexidine-gluconate completely inhibited all species tested in the handwashing trial.

21 Prediction of Horizontal Growth of The Nose. A.M.P. HARRIS, C.L. STEYN and R. DU PREZZ. Faculty of Dentistry, University of Stellenbosch, Tygerberg.

Growth of the nose is a key factor in the outcome of a visual treatment objective (VTO). Ricketts *et al* and Holdaway designed their methods of VTO construction around the expected horizontal development of the chin, repositioning of the anterior teeth and lips and growth of the nose. The objective of this investigation was to try to provide a method for greater accuracy of prediction for horizontal growth of the nose in adolescent Caucasian individuals undergoing four premolars extraction fixed appliance orthodontic treatment. The cephalograms of 249 skeletal Class II patients who had had four premolars extracted prior to orthodontic treatment were directly digitized by a single operator. 32 Hard tissue and 15 soft tissue parameters were evaluated and stepwise regression analyses performed. The models which were derived were: For females $\chi^2 = -1.054967 - e \times 4.524226 - f \times 0.227822 - g \times 3.809131 + h \times 4.12398 + b \times 0.239159 + c \times 0.075988 - d \times 0.229443$ (R-SQ = 0.5650) where χ = distance between Pm and Point A

For males $\chi^2 = 7.152083 - a \times 0.271247 - g \times 0.88331 + i \times 0.460419$ (R-SQ = 0.4315)

where χ = distance between Pm and Point A
 a = pretreatment soft tissue chin thickness at Po
 g = expected change in hard tissue convexity
 i = expected change in angle between Ba N line and palatal plane
The accuracy of prediction for the model for females is much better than that for males (p<0.05), but both may be used with confidence to predict horizontal growth of the nose in adolescent orthodontic patients.

22 The Interaction between Physical Signs, and Chronic Pain, Depression and Non-specific Physical Symptoms in Patients with Temporomandibular Disorders. N. PATEL*, R.J.C. WILDING, University of the Western Cape.

The aim of this study was to use RDC criteria to record the prevalence, and associations between Axis I (physical) and AXIS II (emotional) factors in a sample of 100 patients attending a TMD Clinic. Patients with low to high intensity pain with low-related disability was reported in 71% of the sample and 26% reported dysfunctional chronic pain. Non-specific physical symptoms were reported by 63% of the patients. 66% of the patients were categorised as being moderately to severely depressed. Significant associations were found between non-specific physical symptoms, and both severe depression (p<0.001) and muscle tenderness (p<0.0001). Significant associations were also found between depression and both graded chronic pain (p<0.05) and muscle tenderness (p<0.05). These results emphasise the value in history taking, of questions which reveal associated physical symptoms and depression, as these factors allow a more holistic approach to the diagnosis and treatment of TMD.

23 Demographics of Graduate Orthodontic Applicants in Canada and South Africa. W.A. WILTSHIRE, O. ODLUM and J. DE VRIES. Faculty of Dentistry, University of Manitoba, Winnipeg, Canada

World-wide, orthodontics remains the most highly contested graduate training program. North American and South African orthodontic programs are attracting increasing numbers of foreign applicants. This project compared the demographics of applicants at the University of Manitoba, Canada (UM) and the University of Pretoria, South Africa (UP).

Information was gained from the application forms of graduate student applicants, on gender, citizenship and country in which the Dental Degree was obtained. Application forms 1996-1998 were reviewed for both universities. A similar number of applications were received by both universities, 38 at U.P. and 46 at U.M., for two and three places respectively. The majority of applicants at both universities were male (±65%). Seventy percent of applicants at U.P. were South African and 45% Canadian at U.M. U.M. had a wider range of applicants with foreign degrees, mostly from the Middle and Far East (25%) and South America, Europe and Australia (20%). At U.P., the foreign applicant pool was from the Far East and other African countries (30%). This study confirms that there is a large pool of foreign applicants in orthodontics at U.P. and U.M. The Canadian school attracts more foreign applicants from more countries. This trend is expected to increase since both universities have certified orthodontic programs of international repute. This demand could present opportunities for new sources of revenue for universities as well as increasing international interaction. However the number of places may have to increase if programs are to serve the international and the home market.

24 Integrated Problem-Based Learning at the University of Hong Kong. M.B. COMFORT, M.G. BOTELHO*, E.F. CORBET, W.K. LEUNG and L.P. SAMARANAYAKE. University of Hong Kong.

After an external review of the Faculty of Dentistry a Curriculum Task Force was set up in May 1997 to reform the original curriculum established in 1980 to that of a problem based learning (PBL) curriculum. In the first stage of developing the new PBL curriculum, Task force members attended conferences and workshops and visited institutions that used the PBL medium of instruction. After a considerable deliberation and appraisal of the different types of PBL, the specific requirements of funding and resources necessary to implement this change, it was eventually decided that the most effective reform would involve a move to a pure PBL curriculum. This would involve the students learning what has traditionally been the pre-clinical and clinical subjects in a wholly integrated manner over the 5 year curriculum; there would be no pre-clinical or clinical boundary. The aim of such integration of the basic and clinical science would be to emphasise the importance of appropriate basic science knowledge by integrating it directly into the clinical setting through the use of problems. During this stage of deliberation all the clinical disciplines were asked to submit clinical competencies that would be expected of the dental undergraduates in the new curriculum. After identifying areas of possible overlap, curriculum content was derived from the clinical competencies supplied to the Task Force. The clinical competencies were then staged throughout the ten semesters and from these, learning objectives were written for each of the clinical competencies. The first year problems were then written in response to the years' learning objectives. As mentioned, problems would allow integration of appropriate basic, medical and clinical science learning issues into socially and culturally relevant learning objectives for dental graduates in Hong Kong. Workshops and seminars both in the Dental Faculty and in the University given by PBL experts, have been arranged for training Dental Faculty members on the principles of PBL, how to facilitate tutorials and how to write problems. Further training by PBL experts is required until such time that the Faculty can use its own trained personnel to become trainers and become more self-sufficient.