

ORAL ABSTRACTS

Abstracts for ISDH 2010, 1–3 July 2010, Glasgow, UK

One hundred and seventy abstracts were submitted for the Free Communications sessions of the ISDH 2010 held in Glasgow from 1 – 3 July 2010. Over 80 authors requested oral presentations or workshops. Unfortunately there was only time for eight 30 minute oral presentations and twelve 15 minute oral presentations. The abstracts for these 20 oral presentations and the “top 20” poster presentations are published in this edition. Many ISDH 2010 abstracts that are not published in this journal were of good quality. Sadly there is only room for the 40 that appear in the following pages.

Abstracts for 30 Minute Oral Presentations

Abstract No. 5

stacy.mackie@crdha.ca

AnnEshSpo@aol.com

An update on the drug prescribing activities of dental hygienist prescribers in Alberta

Stacy Mackie¹, Ann Eshenaur Spolarich²

¹College of Registered Dental Hygienists of Alberta, Edmonton, Canada, ²National Centre for Dental Hygiene Research, University of Southern California Dental School, Los Angeles, USA

Objective: Dental hygienists in Alberta, Canada are the first among the global dental hygiene community to receive prescribing status for all drugs used in dental hygiene practice. An innovative self-study curriculum has been implemented to prepare practicing dental hygienists to assume prescribing authority. The objective of this presentation is to describe this training program and outcomes to date.

Methods: In Alberta, course participants use a modular curriculum to learn safe prescribing practices, including client assessment, treatment planning, prescription writing, drug handling, and documentation to ensure client safety and legislative compliance. Educational strategies include the use of computerized databases, case studies, active learning, and live online support sessions. Successful achievement of competency, as measured by performance on course assignments and a comprehensive certification examination, is a prerequisite to obtaining prescribing status.

Results (Findings): A five year research plan has been put into place to assess dental hygienist prescribing abilities, challenges, patterns of behaviour, and the impact of their expanded scope of practice on their clients and communities.

Conclusions (Outcomes): This program will present 18 months of data associated with the first certified dental hygienist prescribers who practice in a variety of care settings. The training curriculum may serve as a model for other organizations who seek to attain prescribing privileges for dental hygienists.

Abstract No. 6

lwebb@ljweduser.v.com

Maximizing dental hygiene student proficiency in local anesthesia

Laura J Webb

CDA RDH MS LJW Education Services, Fallon, Nevada, USA
Faculty Emerita, Founding Program Director (Retired), Dental Hygiene Program, Truckee Meadows Community College, Reno, Nevada USA

Objectives: Approximately 86% of the states in the USA allow dental hygienists to administer local anesthesia (LA). Several countries report that hygienists provide LA to patients, while others are working with their governments to legalize its use. The purpose of this presentation is to share the results of a pilot study and anecdotal data regarding best practices in curriculum design and teaching methodologies which facilitate dental hygiene students developing a high level of confidence and proficiency in the provision of LA.

Methods: In the first three months of 2008, a random sample of 135 American Dental Education Association (ADEA) member dental hygiene program directors across the USA were surveyed on-line with closed-ended questions regarding LA curriculum and instruction. Comments were encouraged. Key elements of the exploration included: foundation course placement, course length, injections required, teaching strategies, evaluation mechanisms, challenges, and strategies for maintaining competency throughout ensuing clinical courses.

Results: One-hundred-eleven responses representing all USA regions were received. Sixty-six completed the survey entirely. Forty-five partially completed the questionnaire and twenty-four did not respond at all. The partial completions appeared to be have been related to a limited knowledge of course requirements and/or no available curriculum, possibly due to legislation in-progress. Programs which have had a LA curriculum in place for many years scheduled introductory training in LA earlier and provided more comprehensive experiences for the students

throughout their program. They reported that, even with rigorous requirements, most students exceeded requirements for numbers of injections administered. Programs with newer curricula reported more challenges with instructor calibration/cooperation, student confidence, treatment planning, and acceptance by patients.

Conclusions: A variety of approaches were used for LA curriculum design and instruction. Significant differences were evident in the number of hours of instruction and number and type of clinical experiences afforded to the students. The information gathered, to date, strongly supports the importance of a quality and comprehensive curriculum with LA content threaded through the curriculum. Data on this topic continue to be collected from dental hygiene educators worldwide through networking opportunities and email.

Abstract No. 9

johnntara@isu.edu

Findings from the bench: chemoprevention of head and neck squamous cell carcinoma

Tara Johnson¹, Ritika Sharma²

¹Departments of Dental Hygiene and , ²Biomedical and Pharmaceutical Sciences, Idaho State University, USA

Objective: To determine the effect of biochanin A, an isoflavone derivative, on signaling pathways driving proliferation and invasion in oral squamous cell carcinoma (OSCC) cell lines.

Methods: Head and neck squamous cell carcinoma cell lines SCC15 and SCC25 were maintained in medium according to American Tissue Culture Center propagation recommendations. Biochanin A stock solutions were prepared and diluted to 5, 10, 20, 50, and 100 µM concentrations. Cells were treated with these drug concentrations for 48 hours. Protein expression was visualized by Western blot and gelatin zymography. Resulting bands were scanned and quantified using Un-Scan-It image software. ANOVA followed by the post hoc Tukey test was used to determine differences between concentrations obtained from zymography and Western blot using KaleidaGraph. *P* values <0.05 were considered statistically significant.

Results: At 50 and 100 µM, biochanin A decreased expression of the protein mammalian target of rapamycin (mTOR), a central regulator of cell proliferation, angiogenesis, and cell metabolism (*P* ≤ 0.01). Matrix metalloproteinases (MMPs) break down proteins, such as collagen, normally found in the spaces between cells in tissues, and thus, are involved in invasion and tumor cell metastasis. Zymographs revealed a weaker intensity of gelatinolytic bands for MMP-9 at 100µM of biochanin A when compared with control. No difference was seen in band intensity of MMP-2.

Conclusion: Because of the finding that biochanin A inhibits two primary proteins involved in cancer proliferation and invasion, results may have interesting therapeutic implications and applications. Further elucidation of effects of isoflavones on regulation of expression of oncogenes and tumor suppressor genes will enhance our understanding of the mechanistic roles isoflavones play in inhibiting carcinogenesis. More importantly, in contrast to some agents presently used in oral cancer chemoprevention and therapy, biochanin A may provide a more effective but less toxic alternative to conventional chemotherapy.

Abstract No. 27

Claudia.luciak@meduniwien.ac.at

New roles for dental hygienists in Europe

Claudia Luciak-Donsberger

Department of Periodontology, School of Dentistry, University of Vienna, Austria

Introduction: In order to facilitate cost-effective oral health equity for underserved and disadvantaged populations, and to respond to the future demographic changes, there is a need for a large multi-skilled dental hygiene workforce, competent to work independently at alternative settings.

Aim The aim of this study was to investigate whether dental hygiene education and regulation in Europe will allow new work roles for primary care providers, in risk behaviour modification, in oral cancer screening, and in the provision of minimally invasive restorative care.

Methods: Information and data on educational curricula and current work roles were obtained via piloted questionnaires and structured interviews with delegates to the International and European Dental Hygienists' Federations and representatives of the Council of European Chief Dental Officers. Further information was gathered from a literature review.

Results: In the European Union and Economic Area, dental hygienists are legally recognized in 22 countries. Since 2003, there has been a significant increase in the number of Bachelor degree programs for Dental Hygienists and in autonomous practice. However, harmonization of Dental Hygienists' education has not been achieved. Evidence suggests that graduates from Bachelor programs are better prepared for Evidence-Based clinical decision-making. Programs in the Netherlands and the United Kingdom prepare graduates for the provision of minimally invasive restorative care and for service in alternative settings. In Finland, Norway and Sweden, a growing number of patients receive primary oral health care from Dental Hygienists at public institutions.

Conclusion: There is evidence that independent multi-skilled dental hygienists are able to provide safe and cost-effective primary oral health care in Europe and may thus contribute to greater equity in oral health care provision. However, an agreement on a harmonized European dental hygiene curriculum leading to defined professional competencies and learning outcomes requires better collaboration between relevant organisations, including governments, universities, and dental and dental hygienists' associations.

Abstract No. 30

r.knevel@latrobe.edu.au

A collaborative oral health project in Nepal involving the local community

Ron Knevel

La Trobe University, School of Dentistry and Oral Health, Bendigo, Victoria, Australia

Objectives: The 'Buddhi Bangara Project' (established in 2005) combines support, education and research. It aims to motivate the Nepalese people's awareness of oral self-care and to promote community involvement in oral health education programs. Within this project the development of the dental hygiene education and the dental hygienist profession in Nepal are supported. The project involves local communities at many levels. Its aim is to provide support without creating dependency.

This presentation describes the curriculum development of the dental hygiene education in Nepal, the developments in the

dental hygiene profession, the establishment of the Dental Hygienists Association of Nepal and the training of rural women in oral health promotion activities.

Methods: Data were obtained through qualitative interviews with the founder of the first dental hygiene school in Nepal, and through personal visits to the dental hygiene schools in Nepal (from 2005 onwards). The author also served and serves as a curriculum adviser allowing him access and input to drafts of the development of current curricular changes. Qualitative and quantitative data analyses were used to describe the effects and impact of the training of rural women in Nepal in oral health promotion activities, as part of a four-month vocational skills program.

Results: The training of rural women proved to be an additional means to achieve oral health awareness in the more remote areas of Nepal. The pilot oral health promotion program at government schools in cooperation with Nepali dental hygiene students was effective in raising oral health awareness and knowledge in the participating children. This resulted in acquiring sufficient resources to establish an oral health promotion-training centre in West Nepal to continue the training of rural women and to provide regular oral health promotion at schools. The Dental Hygiene Education program in Nepal has been accredited and evolved to a 3-year course.

Conclusion: Nepal might benefit from autonomous dental hygienists with expanded functions to begin to address the needs of a large section of the population for primary, minimal invasive restorative care. The dental hygiene workforce at present is too small to have a significant impact on access to care, but there is potential for the future. The training of rural women could be an additional means to achieve oral health awareness in the remote areas of Nepal.

Abstract No. 61

juliegs@unimelb.edu.au

Drivers of change in Oral Health Therapy practice in Australia

Julie Satur

Melbourne Dental School University of Melbourne, Melbourne, Australia

Objectives: In recent years in Australia and New Zealand, the education of dental hygienists and dental therapists has changed in nearly all schools such that they are now mostly in combined outcome Bachelors degrees in Oral Health Therapy. In parallel, regulatory frameworks have emerged allowing a wider range of practice settings, scopes and business models. The objective of this presentation is to examine the drivers of change in oral health therapy practice to inform planning and leadership in the profession, education and policy areas.

Methods: This paper will present the findings of four studies conducted in Australia in recent years examining these developments. They were: a study conducted in Victoria examining the developments in the roles of dental therapists' practice in private sector employment, a study examining the ability of dental hygienists to diagnose and treatment plan oral health care for aged people in residential homes, a study examining the ability of dental therapists to provide restorative care for adults and a graduate study exploring the employment and practice of the last four cohorts of oral health therapy graduates*.

*The author has been an investigator on all four of these studies

Results: The results of these studies, along with an identification of the demographic developments that change demand for oral health therapy services and an examination of recent regulatory developments, will flag the directions of change in oral health service demands in Australia.

Conclusions: The paper will conclude with an examination of the drivers for change emerging out of these studies and will propose regulatory and policy environment changes that will shape the practice of oral health therapy into the future.

Abstract No. 71

Candice.schachter@usask.ca

Adult survivors of childhood sexual abuse are often our clients: fine-tuning dental hygiene care using research-based guidelines

Candice L. Schachter¹, Laura McDonald², Fran Richardson³

¹School of Physical Therapy, University of Saskatchewan, Saskatoon, Canada, ²School of Dental Hygiene, Faculty of Dentistry, Winnipeg, Canada, ³College of Dental Hygienists of Ontario, Toronto, Canada

Objectives: Research showing that at least one in five women and one in seven men is a survivor of childhood sexual abuse strongly suggests that dental hygienists work frequently, (and mostly unknowingly), with adult survivors. This multidisciplinary qualitative research project aimed to use grounded theory and action research to bring together survivors and healthcare providers from across Canada, to identify ways that clinicians could improve healthcare experiences of survivor-clients.

Methods: One hundred and nine women and men survivors were interviewed about their experiences with healthcare providers. They described common problems experienced during healthcare encounters. Working groups of survivors and healthcare providers were then conducted and discussed how clinicians could work more sensitively with survivors of past interpersonal violence. Findings were shaped into a Handbook. Written and oral feedback on the handbook was sought from the survivors and over 300 healthcare providers in 10 disciplines.

Results: The resulting *Handbook on Sensitive Practice* in 2009 is available free from Canada's National Clearinghouse on Family Violence. Nine principles of Sensitive Practice were identified and guidelines that all dental hygienists can adopt to improve survivors' care were developed. This presentation will highlight survivors' difficulties with and reactions to assessment and implementation of the dental hygiene care plan and ways that the principles of Sensitive Practice can be incorporated into all of the dental hygienist's clinical care.

Conclusions: Sensitive practice is a way to fine-tune client centered care for survivors of interpersonal violence. Dental hygienists' input into drafts was crucial to ensuring the *Handbook* speaks to all dental hygienists. The high prevalence rates of abuse and the fact survivors may not disclose past abuse suggest the use of Sensitive Practice with *all* clients *at all* times to facilitate survivor-clients' oral health care experiences. Dental hygiene educational institutions and regulatory authorities in Canada are now responding to the need to inform dental hygiene students and clinicians about Sensitive Practice.

Abstract No. 152

apattison@pattisoninstitute.com

The influence of dental endoscopy on periodontal instrumentation

Anna Matsuishi Pattison

Department of Dental Hygiene, University of Southern California, School of Dentistry, Los Angeles, USA

Objectives: This presentation aims to provide, those attending with:

- An understanding of the use of the dental endoscope .
- A description the appearance of subgingival calculus before, during and after hand and ultrasonic instrumentation with endoscopy.
- The ability to identify instruments that will allow optimum access to difficult areas.
- A description of the instrumentation techniques required to achieve a completely clean root surface.

Methods: The presentation includes endoscopic videotapes showing what happens to subgingival calculus when it is debrided (scaled) with both hand and ultrasonic instruments. In the presenter's opinion, a variety of mini-bladed instruments, furcation curettes, diamond files and specially designed piezoelectric ultrasonic tips are among the most effective new instruments for the removal of calculus. Their use will be discussed as part of this update on advanced periodontal instrumentation.

Results: The use of dental endoscopy has resulted in the development of new instrumentation techniques to remove calculus that is not easy to detect with explorers or probes. Furcations, deep pockets, root concavities, line angles and the cemento-enamel junction are all areas where thin sheets of residual calculus, that have been burnished by conventional ultrasonic scalers, may be left in situ.

Conclusions: Dental endoscopy provides enhanced visualisation of sub-gingival deposits, which should enable clinicians to achieve better clinical outcomes for their patients.

Abstracts for 15 Minute Oral Presentations

Abstract No. 2

rogoelle@isu.edu

Synergy in social action

Ellen J. Rogo

Department of Dental Hygiene, Idaho State University, Pocatello, Idaho, USA

Objectives: Inequities in health exist among certain populations in the U.S., and these populations experience more disease, disability, and premature death. Health is a basic human right and inequities in health are a social injustice. Everyone has a shared social responsibility to improve the health of the nation. Dental hygienists, as oral health care professionals, are called to social action to reduce oral health inequities by improving access to care. The challenges faced by dental hygiene to improve access to care and change the dominant health care delivery system represent an ideological struggle with powerful entities to maintain the status quo. The intent of this study was to understand dental hygienists as adult learners and educators in social action and to construct an interpretive theory relevant to dental hygiene.

Methods: A qualitative study using grounded theory methodology was conducted. Traditional grounded theory methods were used along with a constructivist grounded theory approach and situational analysis during data collection and analysis. Eight dental hygienists engaged in social action and practiced in California, Oregon, and Washington provided the primary data for the study by participating in a semi-structured interview.

Results: Analysis of the interviews indicated that their learning process was characterized by Developing Critical Awareness, Challenging the Status Quo, Surviving in Social Action, and Envisioning the Future. Their educating process was characterized by Building the Oral Health of the Population, Building Support, and Building the Next Generation of Direct Access Practitioners. The resulting theory was *Synergy in Social Action*. Synergy is momentum energized by the interaction among and between the key elements: (1) learning and educating processes, (2) situations and interactions with others, and (3) progression from individual action to collective action.

Conclusions: Dental hygienists experienced synergy while engaged in social action to improve the oral health of the underserved population.

Abstract No. 7

Malin.stensson@hhj.hj.se

Oral health in pre-school children with asthma

Malin Stensson^{1,2,5}, Lill-Kari Wendt², Göran Koch¹, Mats Nilsson³, Göran Oldaeus⁴, Döwen Birkhed⁵

¹Department of Paediatric Dentistry, Institute for Postgraduate Dental Education, Jönköping, ²Centrum of Oral Health, School of Health Sciences, Jönköping, Sweden, ³Futurum-The Academy for Healthcare, County hospital, Ryhov, Jönköping, Sweden, ⁴Paediatric Department, County Hospital, Ryhov, Jönköping, Sweden, ⁵Department of Cariology, Institute of Odontology, University of Gothenburg, Sweden

Aim: To investigate caries and its determinants in preschool children with and without asthma, followed from 3 to 6 years of age.

Methods: Sixty four asthmatic children were recruited from the department of Paediatrics at the County Hospital and three Child Welfare Centers in the Municipality of Jönköping. Fifty matched, healthy control children were selected from the County Council's register of persons in the same area. All children were examined at 3 and 6 years for caries, plaque and gingivitis. Caries was recorded as defs, visible plaque as present or absent and gingival inflammation as "bleeding" or "not bleeding". One calibrated examiner performed the examinations. The 6 year-old children underwent a radiographic examination and saliva sampling. Their parents were interviewed about oral health-related factors. The study was approved by the Ethics Committee at Linköping University, Sweden. The results were statistically analyzed using χ^2 tests, Mann-Whitney U-tests and logistic regression.

Results: The caries increment between 3 and 6 years was 2.5 ± 3.5 defs in asthmatic children and 1.8 ± 3.7 in the controls. The difference in caries increment between the groups was

statistically significant concerning initial caries ($P < 0.05$). More children in the asthma group had gingival bleeding compared to the control group, the only statistically significant difference was at 3 years. There were no statistical significant difference concerning plaque between the groups. The asthma group had a higher consumption of sugary drinks than healthy children at 3 years of age ($P < 0.05$). At both 3 and 6 years of age, asthmatic children were more frequently mouth breathers than healthy children ($P < 0.05$).

Conclusion: In the groups studied, pre-school children with asthma developed more caries between 3 and 6 years compared to healthy children. The asthmatic children had more gingival bleeding, a higher intake of sugary drinks and were more frequently mouth breathers than children without asthma.

Abstract No. 26

info@dhclinic.co.nz

Management of peri-implant pathology in relation to excess luting cement

Mary Mowbray

Dental Hygiene Clinic, 120, Remuera Road, Auckland, New Zealand

Objectives: Many patients today are seeking treatment plans that include implant placement for the rehabilitation of their dentition. In the last 30 years, globally, over 150 different types of implant systems have been used. Implant numbers total many millions.

The high survival rate of osseointegrated dental implants is well documented. However, it is becoming increasingly clear that the peri-implant tissues are susceptible to peri-implant disease which may lead to the implant failing. Many articles and papers have been written on the maintenance of implants, assuming that their placement has been satisfactory and their overlying restoration(s) has/have been placed correctly. Therefore maintenance of these implants, whether cement-retained or screw-retained is relatively easy, provided the patient has good oral hygiene techniques.

Problems can occur during the restorative process, and these can have devastating results immediately after crown placement or in the years following. The aim of this presentation is therefore to consider the management of peri-implant pathology in relation to excess luting cement.

Methods: The presentation will discuss the background of implant maintenance and causes of mucositis and peri-implantitis which are related to inadequate restoration techniques.

Results (learning Outcomes): The planned learning outcomes are to obtain an understanding of:

- The aetiology of the disease process
- The European Federation of Periodontology definitions for peri – implant pathology
- Assessment of the disease process
- Correct radiographic techniques, interpretation of bone conditions and levels
- Correct charting of the relevant clinical indices
- The procedures for foreign body removal
- Recommendations for post operative care, using chemotherapeutics and natural products.

Conclusion: An understanding of the importance of continuous assessment at recall appointments to assess the peri-implant tissue using clinical indices, radiographs and visual inspection, will insure optimal management and treatment of compromised osseointegrated implants.

Abstract No. 28

clarkd@ontarioshores.ca

The mind and the mouth: impact of psychiatric illness and dental management considerations

David Clark

Dental Services, Ontario Shores Centre for mental Health Services, Whitby, Ontario, Canada

Introduction: A recent W.H.O. report states that depression will become the second leading cause of health impairment worldwide by 2020. Psychiatric illness and its medical management carry significant risk for oral disease and this becomes more relevant for interdisciplinary dental care delivery as the focus shifts from traditional institutional based psychiatric treatment to community alternatives for patient rehabilitation. Mental illness and the resulting disabilities inflict immeasurable difficulties on the patients, their families and friends, not the least of which remains the highly stigmatized nature of the disease itself. The type, severity, stage of mental illness, a patient's own mood, motivation and personal perception of oral disease and lifestyle, all contribute to the oral manifestations of many of the more common psychiatric diagnoses. Both the diseases themselves and their pharmacologic management exact a range of oral complications and side effects, with caries, periodontal disease and xerostomia being encountered most frequently. Mental health and oral health are intertwined and can significantly impact on one another. Medications used to treat various forms of mental illness can interact with drugs used in dentistry. Oral health problems can arise as manifestations of mental illness as well as being side effects of psychiatric medications. Psychiatric disorders often lead to decreased compliance for preventive oral care and decreased ability to obtain or tolerate oral health treatment.

Fundamental tenets of any doctor-patient relationship are trust, respect, and education; and these factors are no less important in dealing with patients diagnosed with a psychiatric illness. Enhancing self-esteem and feelings of self worth for those coping with a psychiatric illness is a very fulfilling experience that continues the momentum of bringing mental illness "out of the closet" Such patients bring unique needs and differing priorities to the dental practice and the dental professional must be mindful and flexible in dealing with these factors.

Objectives: Against this background this 15 minute presentation aims to enable members of the audience to:

- Acquire practical background knowledge of psychiatric illness including the disabilities and stigma associated with the disease. This will in turn facilitate a more patient-specific clinical dental care and management of those patients currently dealing with issues of psychiatric illness.
- Describe how oral health problems can arise as manifestations of mental illness as well as being side effects of numerous psychiatric medications.

Describe how medications used to treat various forms of psychiatric illness can interact with drugs used in dentistry.

Abstract No. 31

jckleiman@cox.net

Oral care in ventilator patients

Cindy Kleiman¹

¹Virginia Prendergast Barrow Neurological Institute, Phoenix, Arizona, USA

Objectives: This study sought to assess the relationship between oral health status and ventilator associated pneumonia (VAP) among intubated patients in a neuroscience intensive care unit (ICU) and the influence of care on intracranial pressure (ICP).

The significance is the concern that the provision of oral care during intubation, in an attempt to decrease the incidence of VAP, may pose a risk of increasing ICP.

Methods: The study was approved by the institutional review board. Subjects included 45 consecutive intubated patients at the Barrow Neurological Institute (Phoenix AZ USA) neuroscience ICU during 2006-07. Eligible patients were 18 years or older. Intubation was within 24 hours of admission, and informed consent was obtained from next of kin. Exclusion criteria included fewer than 6 teeth, maxillofacial trauma, unstable cranial fractures, and expected extubation or death within 48 hours. Microbiologic data from oral cultures and clinical data using an oral assessment guide were collected every 72 hours throughout intubation and 48 hours after extubation. Occurrence of VAP and ICP associated with oral care were recorded.

Results: Mean oral health scores deteriorated significantly in every patient during intubation and improved to almost baseline levels 48 hours after extubation. During intubation, the number of oral gram-negative bacteria and yeasts increased. The incidence of VAP was 24% among patients enrolled for 4 to 10 days. During or after 879 occurrences of oral care, overall ICP did not increase. During this phase of the study, nurses were not required to follow a standardized protocol for oral care. Among 30 instances in which ICP was greater than 20 mm Hg before oral care, pressure decreased during and in the 30 minutes after the procedure.

Conclusions: Intubation may contribute to worsening oral health among patients in neuroscience ICU. Performing oral care does not affect ICP adversely. Oral care can be safely provided in patients in neuroscience ICUs and may positively affect incidence of VAP.

Abstract No. 32

Janet.Wallace@newcastle.edu.au

A service-learning model of oral health promotion in residential aged care facilities for the elderly by dental hygiene students: a qualitative study

Janet Wallace

School of Health Sciences, The University of Newcastle, Ourimbah, New South Wales, Australia

Objectives: The objectives of this study were to determine the effect that the oral health undergraduate student placement program had on the oral health knowledge of residents and staff within Residential Aged Care Facilities (RACF) on the Central Coast Australia and how the placement program effected student knowledge and skills development.

Methods: A database of RACF was established and they were invited to participate in the pilot oral health student placement program in March 2009. Seventeen RACF accepted and were visited prior to the commencement of the student placement program, management were individually interviewed and asked to identify existing oral hygiene practices within their RACF and the level of existing staff oral health awareness. A student placement protocol was developed and 54 Students were then allocated to RACF according to the size of the facility and its capacity to support student placements. Students completed pre and post surveys to identify existing knowledge and areas of acquired knowledge as a result of the placement program. In addition to the surveys, students were required to complete tasks as part of the assessment process for this unit of work. These tasks included providing staff oral hygiene education sessions, keeping a reflective folio and conducting an oral health needs analysis to determine information to design an oral health education information poster, specific to each individual RACF.

Results: All RACF Managers reported favourably about student involvement and expressed an interest in participating in the student pilot placement program in 2010. A total of forty eight (89%) of the surveys were returned. Forty six (85%) of students reported that the placement improved their understanding of aged care oral health needs. Fourteen (26%) of students reported that their knowledge had improved considerably, Sixteen (30%) of students reported some improvement, nineteen (35%) reported improvement in knowledge, four (7%) were unsure of any improvement, while one (2%) reported no improvement. A total of forty eight (89%) students reported that they had provided education sessions to RACF staff while five (11%) provided no staff training sessions. A total of forty two (78%) of students advised their RACF was suitable for student placement, twelve (22%) of students expressed concern that their RACF placement was not suitable.

Conclusions: The objectives of this program were achieved, the program provided a supportive learning environment where students, staff and residents increased oral health knowledge and developed oral hygiene skills related to care of the older person. The placement program provided a real life learning opportunity and resulted in positive experiences for the undergraduate oral hygiene students from the University of Newcastle, Australia. The pilot program is now part of permanent student placements within the undergraduate Bachelor of Oral Health degree.

Abstract No. 41

Sandy.cobban@ualberta.ca

The scoping review: another tool for dental hygienist researchers

Sandra J. Cobban*, Eunice M. Edgington,

Jacinda Neilson, Michelle Sutanto

Dentistry-Pharmacy Centre, Dental Hygiene Program, University of Alberta, Edmonton, Canada

Objectives: In dental hygiene's progression toward the status of a profession, the development of dental hygiene's body of knowledge for practice plays an integral role. Key to this development is the expansion of the cadre of researchers contributing research findings. This also leads us to examining methods for dental hygiene research, including the potential contributions of a scoping review as a tool for dental hygienist researchers. The purpose of this presentation is to describe the range of activities and purposes of scoping reviews, and to provide examples of such reviews from the literature and the authors' experiences.

Methods: A search of key databases (Medline, EMBASE, CINAHL) and health organization websites (NHS, CIHR) was conducted to identify a definition for a scoping review and to identify the range of literature presenting as scoping reviews. Search terms used were scope, scoping review, and scoping study. Key characteristics were extracted.

Results: Three main types of scoping activities were identified: scoping search, scoping review, and scoping study. Purposes of these activities included preliminary activity for a systematic review, descriptions of current states of research activity and findings in a given area, and identification of gaps in research activity and knowledge. Iterative stages in a scoping review included identifying the research question, identifying and selecting relevant studies, charting the data, and summarizing and reporting results. A role for user consultation was identified. Unlike systematic reviews, scoping reviews did not typically address quality assessment. Use of scoping reviews is increasing in health, social, and educational fields.

Conclusions: There is a lack of clarity in the literature regarding scoping reviews. This presentation sheds light on the range of

activities that constitute a scoping review, and provides dental hygienist researchers with examples of the potential contribution of this tool to dental hygiene research.

Abstract No. 68

lmacdon@cc.umanitoba.ca

Critical thinking strategies for dental hygiene practice

Laura MacDonald¹*, Lorinda Coan², Joyce Hudson³, Dianne Gallagher⁴

¹University of Manitoba, Canada, ²Indiana School of Dentistry, USA, ³Ivy Tech Community College, Idaho, USA, ⁴Camosun College, Victoria, British Columbia, Canada

Objectives: Critical thinking is a foundational skill for dental hygiene practice. The complexity of the dental hygiene care plan requires the dental hygienist to draw inferences, clarify assumptions, and recognize complications, while developing and adapting the plan with and for the client. To be a good critical thinker one must possess honesty, integrity, courage, humility, autonomy, perseverance, confidence, empathy, and "fair-mindedness" (Paul & Elder 2005), self awareness and self correction abilities (Albino *et al.* 2008). Participants will be asked questions such as: "Do these attributes come with the person selecting a professional career or are they developed and discovered as the profession and the professional grows? Can they be acquired through experience and self development? Does mentorship help? What does a care plan look like that has been created by a critical thinking mind?"

This 15 minute presentation aims to briefly address these questions

Methods: Critical thinking in dental hygiene has received some attention over the past decade. However, there are limited studies to inform the dental hygienist of how much critical thinking improves their services. This presentation highlights preliminary work of a few dental hygiene educators, who are investigating critical thinking and dental hygiene education/practice. Does one first begin to use critical thinking strategies and improve their ability or does one recognize the need to do so (being honest and courageous) and then do it? It is a bit of a "chicken and egg" issue. Can a person be a good critical thinker, but rather lazy about doing it?

Results: Through case studies, several critical thinking strategies will be shared, which participants will be able to employ immediately in their workplace.

Conclusion: Impact on client care is highly dependent on the skill set of the dental hygienist; being a good critical thinker is foundational to all that defines a dental hygienist.

Abstract No. 111

d.slot@acta.nl

Interdental cleaning an evidenced based approach

Dagmar E. Slot

Department of Periodontology, Academic Centre for Dentistry Amsterdam, Amsterdam, The Netherlands

Objectives: This presentation aims to summarise the evidence of the effect of the common interdental cleaning devices to remove plaque and improve gingival/periodontal health? It also reviews how can these results be applied in daily practice?

Material & methods: In the November 2008 issue of the *International Journal of Dental Hygiene* four systematic reviews on interdental cleaning (dental floss, wood-sticks, interdental brushes

[IDB] and oral irrigator) were published. For these papers PubMed-MEDLINE and the Cochrane Central Register of Controlled trials (CENTRAL) databases were searched with appropriate search terms to identify suitable studies. Clinical parameters of plaque, gingival and periodontal inflammation were selected as outcome variables. Independent screening of titles and abstracts resulted in publications that met the eligibility criteria. Evidence from mostly randomized controlled trials was used. Mean values and standard deviations were obtained by data extraction and a meta-analysis was performed when possible, descriptive comparisons were presented. Collectively these four papers provide evidence for the effectiveness of different interdental cleaning techniques

Results: The papers indicate that as an adjunct to brushing the oral irrigator and wood-sticks do not have an additional effect on visible plaque. However, use of wood-sticks can lead to an improvement in interdental gingival inflammation by reducing the bleeding tendency. For the oral irrigator there is a positive trend in improving gingival health. As an adjunct to brushing, IDB removes more dental plaque than brushing alone. Studies showed a significant difference using IDB with respect to the plaque scores, bleeding scores and probing pocket depth. The majority of the studies presented a positive significant difference in the plaque index when using the IDB compared with floss. For dental floss, as an adjunct to toothbrushing, no beneficial effect on plaque and gingival inflammation could be established.

Conclusions: In patients with periodontitis, IDB are most effective in plaque removal. For patients with gingivitis, wood-sticks are an simple an effective tool to resolve gingival inflammation.

Abstract No. 113

bowedeni@isu.edu

Dental hygiene students' self-assessment and perspectives on their professional development

Carole Christie, Denise Bowen*, Carlene Paarmann
Idaho State University, USA

Aim/Objective: To evaluate an educational approach for fostering professional development of dental hygiene students using self-assessment based on American Dental Hygienists' Association standards of professional responsibility (SPR).

Methods: All third and fourth year dental hygiene students ($n = 114$) at Idaho State University between 2004-2008 completed self-assessments regarding how they met nine SPR as individuals and professionals, family/friends, clients, colleagues, faculty/staff, the dental hygiene profession, community/society, and scientific investigation. Each semester, all students rated themselves using a five-point Likert scale and commented on a reflection or action that fostered learning about professional responsibility. The local IRB (American equivalent of Ethics committee) reviewed this retrospective study and ruled that it did not require ethics approval. ANOVA analyses of the data indicating significant differences between students' self-assessment in various semesters were followed by Wilcoxon Signed-Ranks Tests with a Bonferroni correction to the P -value (<0.05). Randomly selected comments ($n = 30$) were coded and categorized using components of the nine standards. Frequency data was based on this process of coding students' open-ended responses.

Results: Students perceived growth over time ($P \leq 0.001$) from semester 1 to 4 in relation to themselves as individuals and professionals, clients, colleagues, the dental hygiene profession, community/society, and scientific investigation. No difference ($P > 0.05$) was noted in self-assessment of family/friends or faculty/staff. Coding and analysis of comments suggested students

begin the curriculum recognizing professional limitations ($n = 94$), striving to learn ($n = 26$), focusing on safety ($n = 31$) and balancing healthy lifestyle with demands of professional education ($n = 19$). Growth and learning, or professional development, was linked to patient experiences ($n = 135$), volunteering ($n = 88$), peer review and collaboration ($n = 90$), professional involvement ($n = 66$), continuous learning for competency ($n = 41$), and critical analysis of literature for evidence-based practice ($n = 30$). Clinical grading of professional judgment also was a source of growth.

Conclusion: Students' perceptions of their professional development varied over time. Regular self-assessment of professional responsibilities provides opportunity for student reflection and assessment of student competence in ethics and professionalism.

Abstract No. 118

Wish.dentalhygiene@gmail.com

The Winnipeg Inter-professional Student Run Health Clinic: a "WISH" for access to care

Kyle Conrad*, Lorraine Roberts, Kellie Hildebrandt, Mickey Emmons Wener, Laura MacDonald
School of Dental Hygiene, University of Manitoba, Winnipeg, Canada

Objective: Winnipeg's Inter-professional Student Run Health Clinic (WISH) is a multi-professional student initiated and operated primary health clinic (PHC) which enables access to holistic health care for underserved populations with an inter-professional focus on the determinants of health. Under the supervision of licensed mentors from the students' respective professions, WISH clinic's goal is to provide sustainable health care in an environment conducive to overall health. The dental hygiene clinic addresses human needs deficits, promotes and educates clients and health professionals regarding the linkages between oral and systemic health. The significance to dental hygiene includes the promotion of the profession to the public and other health professionals. This presentation aims to outline how these objectives have been achieved.

Methods: Permission from the dental hygiene regulatory body, the College of Dental Hygienists of Manitoba (CDHM) and the university's dental hygiene school was procured as Manitoba legislation requires supervision of students by licensed, extended practice dental hygienists, who possess an affiliation with the University of Manitoba. Mentor recruitment occurred through conference presentations and advertisements in professional publications. Project logistics were coordinated exclusively by students. Facilitation of a smooth transition annually is ensured by senior students providing clinical care and junior students assisting.

Results: Dental hygiene, as one of over 10 health professions, has been incorporated into the WISH clinic since September 2009. Evidence of an increased knowledge base of the public and other health professions has been observed. The dental hygiene clinic is scheduled to open during 2010.

Conclusions: The WISH Clinic serves as a role model for the successful inclusion of oral health as part of overall health services. The WISH experience ignites a passion for ensuring access to comprehensive healthcare along with the recognition of oral and systemic health linkages and the future of oral health care in inter-professional practice.

Abstract No. 120

Pia.andersson@hkr.se

Tobacco cessation activities among dental hygienists in Sweden

Pia Andersson^{*1}, Seppo Wickholm², Annsofi Johannsen²
¹Kristianstad University, Sweden, ²Karolinska Institutet, Huddinge, Sweden

Objectives: The aim of the present study was to investigate current practice and perceived barriers regarding tobacco cessation activities among Swedish dental hygienists (DHs). A secondary aim was to study knowledge about the importance of tobacco cessation in relation to different oral health conditions.

Methods: A questionnaire including twenty-five questions was mailed to 400 randomly selected DHs in Sweden asking them about their tobacco cessation routines and perceived barriers. Questions were also included regarding knowledge about the importance of tobacco activities in relation to different conditions: caries, gingivitis, periodontitis, and dental implants. The study was approved by the Ethics Committee at Kristianstad University, Sweden.

Results: The response rate was 57% ($n = 229$). Forty-five percent ($n = 103$) of these had received courses in tobacco cessation during or after their dental hygienist graduation. Tobacco cessation services were given by 64% ($n = 146$) of the DHs. To improve the work with tobacco cessation 53% ($n = 121$) of the DHs expressed a need for written guidelines and 37% ($n = 84$) wished for courses. Of those DHs ($n = 83$) who did not provide tobacco cessation advice, 69% ($n = 57$) reported insufficient competence, while the remaining 31% ($n = 26$) reported other obstacles to offering the service.

Conclusions: The present study indicates that to provide tobacco cessation advice in clinical practice, DHs require theoretical knowledge and clinical experience in this topic.

POSTER ABSTRACTS

Top 20 Poster Abstracts

Abstract No. 11

Ulrika.lindmark@hhj.hj.se

Sense of coherence (soc) and oral health among Swedish adults – a population study

Ulrike Lindmark*, Magnus Hakeberg, Anders Hugoson
Centre for Oral Health, School of Health Sciences,
Jönköping University, Jönköping, Sweden

Objectives: One technique to measure health related behaviour is to utilise sense of coherence (SOC), which estimates a person's degree of an inner strength and attitude to the world around, and, by extension, maintaining health. People with a high level of SOC have been seen to exhibit adaptive health behaviour. The aim of the study was to investigate a person's ability to maintaining health, in terms of SOC in relation to oral health.

Method: A stratified random sample of 910 individuals from Jönköping, Sweden, aged 20, 30, 40, 50, 60, 70 and 80 years old, was drawn. The investigation utilized the Swedish short version of the orientation to life questionnaire (SOC) with 13-items and a self-reported questionnaire about demographic information, oral health related behaviour and attitudes to oral health. These questionnaires were distributed in person at the time of a clinical and radiographic examination. From an amount of clinical registrations, following variables were recorded for current study: number of permanent teeth, plaque and gingivitis scores, teeth with supragingival calculus, initial and manifest caries and probing pocket depths (PPD). Ethics approval for the study was obtained from the Ethics Committee at the University of Linköping, Sweden (ref. no: 02-376). The results were statistically tested using Statistical Package for Social Sciences (SPSS version 16.0).

Results: A total of 525 individuals participated in the study, 261 men and 264 women. Mean SOC scores increased with age, and the youngest group (20-year-olds) had a significantly lower SOC score compared to the other age groups. Bivariate results showed that individuals with higher SOC scores had statistically significant relationships with oral clinical status such as more decayed filled surfaces (DFS), less caries severity, less teeth with calculus and a higher level of periodontal health. SOC was also significantly associated with dental plaque and PPD ≤ 4 mm, after controlling for socioeconomic and demographic factors.

Conclusions: Younger individuals had lower SOC scores compared to elderly individuals. Some statistical associations were found between SOC scores and oral health with regard to several important oral clinical variables and higher SOC scores may indicate a protective determinant for dental plaque and periodontal disease.

Abstract No. 14

Susanne.einarson@hhj.hj.se

Oral health impact on quality of life in an adult Swedish population

Susanne Einarson¹, Elisabeth Wamberg Gerdin², Anders Hugoson¹

¹School of Health Science, Jönköping University, Sweden

²Center for Public Health Science, County of Östergötland, Linköping, Sweden

Objectives: Quality of life is an expression with many meanings and it creates positive associations for most people. Oral health has a major impact on general quality of life. The aspects that are most important for each individual vary, and quality of life is not a measurable variable but a construct. The aim of this study was to describe oral health-related quality of life measured with Oral Health Impact profile with 14 questions (OHIP-14) in an Swedish adult population.

Methods: This is an epidemiological study and it comprised a stratified random sample of 519 individuals (260 men and 259 women) 20-80 years of age. The OHIP-14 questionnaire was used for measurement of oral health-related quality of life. The answers were rated on a scale of 0-4 and the questions were organized in seven dimensions. The Linköping Ethics committee gave approval (Dnr 02-376) for the study.

Results: Four-hundred-and-twenty-five participants answered all 14 questions and 54 individuals answered 1-13 questions. Twenty-one percent of the respondents stated that they had no oral problems that were negative related to their well-being, and 79% had some form of problem related to quality of life. The mean value for the entire population was 6.4 (SD = 7.1); 5.9 (SD = 7.1) for men and 6.8 (SD = 7.2) for women. Of the individuals who stated that they had oral problems, the majority were among women aged 20-years. Nineteen percent of 30-year-old men and 53% of 70-year-old women stated that they had had problems that had made their life feel less satisfactory. Individuals who frequently experienced problems related to oral health, with scores of 16-41 points, accounted for 10%. Internal reliability of the OHIP scale showed good internal consistency with a Cronbach alpha coefficient of 0.90.

Conclusions: In this Swedish population, a number of individuals, young and old, experienced oral problems that had a negative impact on their well-being.

Abstract No. 20

Pauline.watt@btinternet.com

Investigating dental treatment as a possible risk factor for variant Creutzfeldt-Jakob Disease. In the United Kingdom (excluding Northern Ireland)

Pauline Watt^{1*}, Dawn Everington², Fiona Ord¹ *et al.*

¹NHS Lothian, Scotland, ²National CJD Surveillance Unit, Edinburgh, Scotland

Objectives: There is a possibility that vCJD may be transmitted through dental treatment. This study aimed to access and examine the dental records of all known vCJD cases in the United Kingdom (excluding Northern Ireland) with onset dates from 1994 – 2008 and controls to report dental treatment undergone and whether or not vCJD sufferers experienced a greater number of dental procedures compared to controls.

Methods: Ethics approval for this study was granted by Lothian Multi-Centre Research Ethics Committee. One hundred and fifty eight cases of vCJD (158) were identified. Controls were recruited from the general population in 2003 as part of a larger study (Hester *et al.* 2006). Due to the nature of the disease the majority

of the vCJD sufferers had died. Consent to view their dental records was therefore obtained from their families and those of the controls. These records were then accessed by contacting the patients' general dental practitioners directly. Where case records could not be obtained, data were requested from NHS Dental Practice Boards. Treatments carried out since 1980 were recorded. The families of the vCJD sufferers were asked for dental information near to the disease onset (1994-2008) by letter during 2009. The families of controls were asked for this information for 2003.

Results: The success rate for dental record retrieval for cases and controls was 54/158 (34%) and 444/849 (52%) respectively. NHS data were obtained for a further 23 cases and 59 controls, resulting in 77 (49%) of cases vCJD and 503 (59%) of controls with data.. The highest rate of dental record retrieval was achieved for 2003 for controls and decreased year on year going back in time. The rate of dental record retrieval for cases mirrored the onset rate. The rates are very low before 1990.

Conclusions: Several problems were encountered in retrieving dental records, the main ones being that in the UK dental records do not 'follow' the patient as medical records do when a person changes their dentist. This study highlights the difficulties in obtaining an evidence base for transmission of infection following dental treatment. Consideration should be given to improve the quality, accessibility and long term viability of patient dental treatment information.

Abstract No. 33

Agneta.Stenebrand@hhj.hj.se

Dental anxiety and temperament in 15-year olds

Agneta Stenebrand^{1*}, Magnus Hakeberg²

¹Jönköping University, School of Health Science, Department of Natural Science and Biomedicine, Jönköping, Sweden,

²Institution of Odontology, The Sahlgrenska Academy, University of Gothenburg, Gothenburg, Sweden

Objectives: Dental anxiety has a major impact on oral health and general quality of life. Previously, some studies have shown an association between dental anxiety and temperament among children and adults. However, there is a lack of cohort studies which have investigated a possible relationship in adolescents. The aim of the present study was to analyse the prevalence of dental anxiety and its association with temperament (EASI - emotionality, activity, sociability, impulsivity), socio-demographic factors and previous painful and unpleasant experiences of dental care among 15-year old individuals.

Methods: The sample included 263 randomly selected 15-year old individuals living in the municipality of Jönköping, Sweden. The school, parental and adolescent consent was acquired. Because no sensitive or clinical procedures were performed on the 15-year olds, no ethic approval was necessary. Three self-reported questionnaires were used, one included items of socio-demography, while the others dealt with dental anxiety assessed by the Dental Fear Survey (DFS) and temperament assessed by an adapted version of "The EAS Temperament Survey for Children" now composed of 25 items, which has been modified for adults, the EASI temperament survey. SPSS 16.0 was used for statistical analysis with T-test, Mann-Whitney U-test, Chi-square test, Fisher's exact test, Pearson correlation and Hierarchical multiple regression.

Results: The results showed that 6.5 % of the adolescents were classified as dentally anxious and with girls proportionally more fearful than boys. The three temperaments activity, impulsivity and emotionality were significantly correlated with dental anxiety. A hierarchical multiple regression analysis showed that pain at

the last dental appointment or previous pain experiences during dental care treatment were the strongest predictors regarding dental anxiety in 15-year olds. The temperament dimensions activity and impulsivity had also statistically significant correlations to dental anxiety in this regression analysis.

Conclusions: Although some of the temperament dimensions are correlated with dental anxiety, this study showed that previous pain experiences during dental care treatment is a strong predictor for high dental anxiety in 15-year olds.

Abstract No. 54

Brittlouise.k@gmail.com

The physical and psychosocial work-environment and work-satisfaction among Swedish self-employed dental hygienists

Britt-Louise Kinnefors

Dalarna University, Sweden

Objectives/Aims: The aim of this study was to review self-employed dental hygienists (SeDH) in Sweden and to study their physical and psychosocial work-environment in relation to work-satisfaction within the group.

Methods: All dental hygienists listed as members of the Swedish Dental Hygienist Association's section for SeDH ($n = 179$) in 2005 were invited to participate in this study by answering a questionnaire based on the short version of the General Nordic Questionnaire for Psychological and Social Factors at Work, QPS Nordic 34+. Data were collected on demographics, work history, working conditions and degree of work-satisfaction in relation to factors at work. Factor analysis was initially used to create indices, the Mann-Whitney U-test to analyse comparisons of groups and the chi-squared test to illustrate the relationship between work-satisfaction and factors at work. The study was ethically approved by the Research Ethics Committee at Dalarna University, prior to initiation of the project.

Results: Older SeDH and those with more than 19 years in the field experienced a higher grade of mastery, role clarity and reported a lower degree of stress than their younger peers. Stress was also related to more than thirty working hours per week. Work-satisfaction, pleasure and pride in the work one does were given high scores, particularly the scale dealing with professional pride. Control of workload, a high decision latitude and positive feedback from patients correlated significantly with work-satisfaction. Control of workload, positive feedback from patients and dentists and to belong to a group also correlated significantly with pleasure deriving from practicing one's profession.

Conclusions: The results supported the hypothesis that there appears to be a correlation between physical and psychosocial work-environment and work-satisfaction among SeDH in Sweden.

Abstract No. 56

Seida.erovic@hkr.se

The short-term effect of different rinsing products aimed to reduce halitosis

Seida Erovic¹, Peter Lingström², Stefan Renvert^{1,3,4}

¹Section for Health and Society, Kristianstad University, Kristianstad, Sweden, ²Department of Cariology, Institute of Odontology, The Sahlgrenska Academy, University of Gothenburg, Sweden, ³School of Dental Science, Trinity College, Dublin, ⁴Blekinge Institute of Technology, Karlskrona, Sweden

Background: Halitosis is caused by bacteria producing volatile sulphur compounds (VSC). The oral cavity is the most common source of VSC responsible for approximately 90 % of cases with bad breath.

Aim: The aim of this study was to evaluate the short-term effect of different mouth rinse products used for the treatment of oral halitosis.

Methods: Twenty-four adults with oral halitosis were included in a double blind, cross over randomized clinical study. Six test periods, each 12 hours, separated by washout periods of 1 week, was used to evaluate a placebo and 5 mouth rinse products: A) Water, B) SB12, C) Halita, D) SB12 mild, E) Listerine Total care, F) Retardex. Registration of VSC using a Halimeter®, OralChroma™ and organoleptic scoring was done 12 hours after rinsing.

Results: The Halimeter® readings demonstrated a significant difference between placebo and treatment F. The OralChroma™ values for Hydrogen sulphide demonstrated a significant difference between placebo and treatments B, C, D, E and F ($P < 0.000$, $P < 0.000$, $P < 0.000$, $P < 0.05$ and $P < 0.01$). The mean reduction of the treatments compared to placebo was 86 %, 86 %, 77%, 57 % and 68 % respectively. The organoleptic scores for treatments B, C, D and F differed significantly compared to placebo ($P < 0.001$, $P < 0.01$, $P < 0.05$ and $P < 0.01$).

Conclusion: All treatments had effect on bad breath compared to placebo 12 hours after rinsing. No significant difference was found between the treatment modalities.

Abstract No. 60

amyotc@umkc.edu

Extending oral healthcare services to unserved and underserved children using an extended care permit (ECP) dental hygienist as the coordinator

Cynthia C. Gadbury-Amyot MSDH, Ed.D.,

Melanie Simmer-Beck MSDH

University of Missouri-Kansas City School of Dentistry,
Kansas City, USA

Objectives: To describe an alternative workforce model for the delivery of oral healthcare services to at-risk children in the United States. To illustrate how the current delivery system (private practice model) works well for healthy, ambulatory, insured and motivated individuals but leaves a large segment of the population unserved or underserved.

Methods: The school district chosen for this project contains a large proportion of students who are defined as vulnerable and unserved or underserved in terms of access to oral health services. As a result of a change in the dental practice act (DPA) in the state of Kansas, that expanded the scope of practice of dental hygienists, an extended care permit dental hygienist (ECP-RDH) coordinates the program. Comprehensive preventive services are provided by dental hygiene students from the University of Missouri-Kansas City under the supervision of the ECP-RDH. The ECP-RDH serves as a liaison between the school district and the dental school, the school district and the children's' parents, and the children's' parents and dentists in the community.

Results: In accordance with the Kansas DPA all participating children qualified for free or reduced lunches (indicating at or below 200% poverty level). The majority of participating children were Hispanic. Assessment data revealed that the overall oral health of the children participating in the program was worse than comparable data reported by both federal and state governments. Services provided in one academic year included: 350 prophylaxis, 272 bitewing x-rays, 342 fluoride varnish and 302 sealants. Children requiring restorative care (63%) were referred to a community dentist.

Conclusions: Alternative workforce models in dentistry have been used internationally for decades. While political divisions have previously prevented any progress in this regard, public indignation over the lack of access has begun to move legislatures to reconsider less restrictive practice acts. Models such as the one described above hold promise for the power of collaboration in addressing healthcare issues.

Abstract No. 75

koh@su.se

The importance of circadian rhythm on oral health

Anne-Marie Lundgren, Kerstin Öhrn

Dalarna University, Falun, Sweden

Many young people report that they are very tired in the morning and do not always brush their teeth or have a healthy breakfast

Objective: The objective of the present study was to investigate the correlation between dental caries and circadian rhythm, dietary and oral hygiene habits.

Methods: A consecutive sample of 260 adolescents who were scheduled for a recall visit at one of 8 Public Dentistry Clinics in Uppsala County Council was invited to participate. They were selected based on previous caries registration. Half of them were diagnosed with dental caries and half of them were assessed as having healthy teeth. The research ethics Committee of Dalarna University approved the study. A questionnaire was handed out in connection with the participants' ordinary visit to each clinic.

Results: A total of 196 (75%) adolescents completed the questionnaire which covered questions in regard to circadian rhythm, dietary habits and oral hygiene habits. Of the participating children, 105 (53%) had healthy teeth and 91(47%) were diagnosed with dental caries. A total of 72 (37%) were categorized as evening persons and 26 (13%) as morning persons. The remaining group 98 (50%) were categorized as neutral. There were significantly more evening persons diagnosed with dental caries than the other categories. There were also significantly fewer adolescents among the evening persons who brushed their teeth twice daily and had a healthy breakfast than in the other categories.

Conclusion: Adolescents who are evening persons need special attention with regard to oral health. Supplementary fluoride rinsing and healthy snacks in the morning could be a useful recommendation.

Abstract No. 76

Brittmarie.jacobsson@hhj.hj.se

Oral health and coherent determinants in children and adolescents with foreign background compared to Swedish youth. Changes over a 10 year period

Brittmarie Jacobsson¹, Göran Koch²,

Tomas Magnusson^{1,3}, Anders Hugoson¹

¹Centre for Oral Health, Jönköping University, Sweden,

²Department of Paediatric Dentistry, Institute for Postgraduate Dental Education, Jönköping, Sweden, ³Department of Stomatognathic Physiology, Institute for Postgraduate Dental Education, Jönköping, Sweden

Aim: The aim of this study was to investigate oral health status and coherent determinants in children and adolescents with a foreign background compared to children with Swedish background.

Methods: In 1993 and 2003 cross-sectional studies with random samples of individuals in the age groups 3-, 5-, 10- and 15-years were performed in Jönköping, Sweden. All individuals were personally

invited to a clinical and radiographic examination of their oral health status. They were also asked about their attitudes and knowledge about teeth and oral health care habits. The final study cohort comprised 739 children and adolescents, 154 with Foreign background (F-cohort) and 585 with Swedish background (S-cohort).

Results: Both in 1993 and 2003 more 3- and 5-year-olds in the S-cohort were caries-free compared to the F-cohort. In 1993 dfs/DFS was higher among 3- and 5-year-olds in the F-cohort ($P = 0.01$). In 2003 dfs/DFS was significantly higher in all age groups in the F-cohort compared to the S-cohort. The cumulative percentage of proximal caries-free, initial and manifest lesions and restorations among 10-year-olds in the F-cohort were in 1993 55%, 23%, 4% and 18%. The corresponding figures for the S-cohort were 69%, 20%, 6% and 5%, respectively. In 2003 the figures in the F-cohort were 54%, 29%, 4% and 13% compared to 82%, 12%, 1% and 5% in the S-cohort ($P = 0.037$). Among males with foreign background and who lived in families with low education, the odds was four times higher (OR=4.0 + 95%CI; 2.2-7.2) to be exposed to dental caries than among their Swedish counterparts.

Conclusions: There had been a decline in caries prevalence between 1993 and 2003 in all age-groups except among the 3-year-olds. However the improvement of dfs/DFS was larger in the S-cohort in all age-groups and the gap between the F- and S-cohorts was considerable larger in 2003 compared to 10 years earlier.

Abstract No. 79

abl@du.se

A new concept for clinical studies in dental hygiene

Anna-Britta Larsson, Görel Müller,
Christina Ohlsson, Kerstin Öhrn
Dalarna University, Falun, Sweden

Introduction: Dalarna University has adopted a new concept for clinical studies for dental Hygienist students. The aim of this poster is to explain this new concept.

Methods: The new Dental Hygienist training programme consists of 120 ECTS (2 years), of which 90 ECTS are for theoretical studies and 30 ECTS are for clinical studies. Since 1999 all clinical studies take place in public dental clinics with Dental Hygienists employed at the clinic as supervisors. In the first semester the students observe clinical practice in general at the clinic. In the second semester there is pre-clinic practice at the university followed by clinical practice when the students assist the supervisor and practice under direct supervision. During the third semester the students treat patients under indirect supervision. Finally in the fourth semester the students become more independent with increased responsibility and treat some recall patients. During each semester the students are examined by the teachers at the university. This examination is partly based on assessment by the supervisor.

Results: An evaluation of the new program has shown that the students have had greater opportunities to undertake necessary practice and consequently have achieved their goals. In addition, the students have reported that they have received satisfactory feedback from the supervisors. The employers were in general satisfied with the education.

Conclusion: It was concluded that the concept of locating clinical practice in the Public Dental Care seems to be satisfactory. In addition, it gives the students opportunities to become aware of what daily clinical work involves for a Dental Hygienist.

Abstract No. 85

Margaret.steffens@adelaide.edu.au

A home for oral health: implementing an oral health intervention among a metropolitan-dwelling homeless population

Margie Steffens, Lisa Jamieson, Eleanor Parker,
Richard Logan, Peter Cathro
University of Adelaide, Australia

Objectives: A limited number of health interventions have been implemented among homeless populations throughout the world. There is even less evidence of oral health-related interventions among this disadvantaged group. This presentation aims to highlight key messages learnt in a metropolitan-based oral health intervention entitled 'Home for Oral Health' conducted in Adelaide, Australia over a one-year period.

Methods: The study had three components: (1) baseline questionnaire implemented among as many homeless adults as could be located in the central business district of Adelaide, Australia in a three-week period, (2) four months after baseline, oral health education initiative conducted at the location where the participants were when they completed the baseline questionnaire, (3) follow-up questionnaire conducted four months following the intervention. Domains in the self-report questionnaire included socio-demography, substance use, use of dental services, self-related health, self-related oral health, including oral health self-efficacy and quality of life. The oral health education initiative, based on social cognitive theory concepts, aimed to improve oral health-related knowledge, self-efficacy and understanding of how to access emergency dental services. During implementation of the baseline and follow-up questionnaires, participants were reimbursed for their time by a gift voucher. Refreshments and dental-related items were provided at the oral health education sessions.

Results: Located in six different homeless locations, 248 participants completed a self-report questionnaire at baseline. Their age range was 17–78 years, 79 percent were male. Some 81 participants received the education initiative. Follow-up questionnaires, identical to those at baseline were completed by 72 participants, only 22 of whom had attended an oral health education session. Subsequent to the baseline questionnaire, only one third of the participants were located and interested in taking part in the oral health education initiative. Of this group around one-quarter completed a follow-up questionnaire.

Conclusions: This study highlights the difficulties in conducting interventions among homeless populations, despite the evident need for obtaining oral health-related information and implementing initiatives to improve oral health-related outcomes.

Abstract No. 91

jdneilso@ualberta.ca

Identifying valid and reliable tools for oral assessment in long-term care: a scoping review

Jacinda D. Neilson, Michelle J. Sutanto, Sandra J. Cobban,
Eunice M. Edgington
Dental Hygiene Program, University of Alberta, Edmonton,
Canada

Objectives: The need for improved oral health in long-term care (LTC) is great. Today's elderly retain more of their natural teeth, but greater levels of cognitive impairment and greater functional dependence leave many LTC residents unable to provide self-care. Routine oral assessments are necessary. Thus the purpose of this study was to identify valid and reliable oral health assessment tools suitable for use in LTC.

Methods: A scoping review methodology was employed. Key databases: Medline, EMBASE, CINAHL, and Cochrane DSR were interrogated with the search terms: oral health, OR oral hygiene, oral care, mouth hygiene, oral hygiene care, oral exam*, oral diagnosis, oral screen*, dental screen*, Dental Plaque/di [Diagnosis], Gingivitis/di [Diagnosis], Stomatitis, Denture/di [Diagnosis], oral assessment, dental assessment, dental examination*, Dental Care for Aged, Aged/, "Aged, 80 and over", elder* care, AND homes for the aged, nursing home*, long*term care. MeSH headings and subheadings, truncations, and mapping were adapted as appropriate. Inclusion criteria were: elderly, long term care, assess objective measure of oral health, and reliability and validity of tool documented.

Results: 1324 citations were retrieved, duplicates were removed, and 1125 titles remained. Titles were independently screened by three investigators and 168 abstracts were selected for further review. Discussion was used to achieve consensus. Abstract screening resulted in 42 articles meeting inclusion criteria. Article screening is underway.

Preliminary Conclusions: A number of tools have been identified to date. Tools fall loosely into two categories: tools more appropriate for use by dental professionals, and tools for use by nurses or other healthcare staff. Some are more appropriate as screening tools, and others more appropriate for detailed assessment of oral health. There were a high number of studies that used self-designed assessment tools with little discussion of reliability and validity. An intended outcome of this review is a list of valid and reliable assessment tools, categorized by potential applications.

Abstract No. 93

s.m.murray@qmul.ac.uk

Dental hygienist's performance of tobacco cessation activities in the primary dental care environment

Sarah Murray, Allan Pau, Baldeesh Chana

Barts and the London School of Medicine and Dentistry, London, United Kingdom

Objectives: To investigate dental hygienists' (DH) performance of tobacco cessation activities with their patients in the dental surgery, and to explore the factors associated with this performance.

Methods: Data were collected by postal questionnaires which included demographic questions and questions relating to DHs' attitudes and their performance of tobacco cessation activity in the primary dental care environment. The non-demographic questions were answered using the Likert scale (1 to 5). The original draft of the questionnaire was piloted by 12 dental hygienists/therapist students and was revised in the light of their feedback. The survey sample consisted of all dental hygienists registered with the General Dental Council and residing within London or the Home Counties ($n = 671$). Anyone who did not respond to the first mailing was sent the questionnaire for a second time.

Results: There was a 61% response rate after a second mailing ($n = 412$).

The key finding was that dental hygienists who responded more positively to questions on their attitudes towards tobacco cessation were significantly more likely to perform smoking cessation activities. Results showed that socio-demographic or professional attributes were not associated with performance of tobacco cessation activities.

Conclusions: This study demonstrated that in the group studied, most dental hygienists who worked in dental practice held

some positive attitudes towards providing tobacco cessation activities and those who had more positive attitudes were more likely to perform more tobacco cessation activities. However, to support national guidelines, effective coordination within the dental team and with NHS stop smoking services is essential to overcome the barriers of tobacco cessation activities by dental hygienists.

Abstract No. 115

agadbroo@isu.edu

bowedeni@isu.edu

Effects of two methods of non surgical periodontal therapy (NSPT) on health-related quality of life and illness for patients with chronic obstructive pulmonary disease (COPD): preliminary results of a randomized controlled clinical trial

Carlene Paarmann*, Brooke Agado, Denise M. Bowen
Idaho State University, USA.

Objectives: Evidence documents connections between acute respiratory infections and oral bacteria of immunocompromised/hospitalized patients. Data are lacking for ambulatory patients. The purpose of this study was to determine if patients with COPD receiving NSPT with hand (HI) or ultrasonic instruments (UI) have a change in their health-related quality of life as reflected by the St. George's Respiratory Questionnaire (SGRQ-A) or experience incidents of post-treatment illness as reflected by the Illness Following NSPT Questionnaire (IFNQ), compared to no treatment (control) patients.

Methods: Following IRB approval, volunteer patients with COPD and moderate to advanced periodontitis were recruited from local medical facilities or via fliers ($n = 30$) and randomly assigned to one of three groups. Two groups received NSPT using magnetostrictive UI ($n = 10$) or curettes ($n = 10$); the control group ($n = 10$) were offered and nine received treatment following posttest completion. Subjects completed the SGRQ-A and IFNQ as a pretest at baseline and posttest 4 weeks post-treatment (or no treatment). The SGRQ-A has three components (symptoms, activities, impacts) and a total score, where a lower score indicates an improvement in health-related quality of life. The IFNQ inquired about doctor visits, use of medication, and avoidance of dental procedures due to respiratory disease. All research was conducted at Idaho State University. Percentages and frequencies were calculated for categorical data. Oneway ANOVA was used to compare the three groups on continuous variables ($P \leq 0.05$). Preliminary results were calculated for subjects completing SGRQ-A and IFNQ posttests ($n = 29$; 10 UI, 10 HI, 9 C).

Results: SGRQ-A and IFNQ showed no significant difference between groups with slight improvement from pretest to post test. The total SGRQ-A score decreased slightly for all three groups ($p=.146$). Cross-tabulation showed no difference in variables related to self-reported illness (i.e., IFNQ) before and after treatment/no treatment.

Conclusion: NSPT may be performed with UI or HI without affecting health-related quality of life and illness in COPD patients (although small sample size affected the power to detect statistical significance).

Abstract No. 127

mpc@v-leeuwen.com

Listerine® compared to chlorhexidine with respect to plaque and parameters of gingival inflammation: a systematic review

Martijn PC. Van Leeuwen, Dagmar E. Slot, G. Fridus, A. Van der Weijden

Department of Periodontology, Academic Centre for Dentistry Amsterdam, Amsterdam, The Netherlands

Objective: The purpose of this systematic review was to evaluate the effects of Listerine® compared to chlorhexidine mouthwash with respect to plaque and parameters of gingival inflammation in patients with gingivitis.

Materials and Methods: PubMed-MEDLINE and the Cochrane Central Register of Controlled Trials were searched up to April 2010 to identify appropriate papers. This comprehensive search was designed to include published clinical trials that evaluated the effects of Listerine® compared to chlorhexidine mouthwashes. The mouthwashes were either used as a mono-therapy or as an adjunct to self-performed daily oral hygiene. For short-term studies (< four weeks), plaque was the parameter of interest. Parameters mentioned in long-term studies (≥ four weeks) were plaque, stain, calculus, bleeding and gingivitis.

Results: Three hundred and seventy-three unique papers were found, of which 19 met the inclusion criteria. Meta-analysis of long-term studies showed that chlorhexidine mouthwashes provide significantly better effects regarding plaque control than Listerine® (WMD = 0.19, $P = 0.0009$). No significant difference, with respect to reduction of gingival inflammation, was found between Listerine® and chlorhexidine (WMD = 0.03, $P = 0.58$). The results of this study are applicable to patients diagnosed with gingivitis or receiving periodontal maintenance care.

Conclusion: This review has demonstrated that chlorhexidine mouthwash is more effective as a plaque control agent than Listerine®. For control of gingival inflammation, Listerine® is no different to chlorhexidine. Considering the potential benefits in the light of the observed side effects, Listerine appears to be a reliable alternative to chlorhexidine with respect to gingival inflammation. However, for indications where plaque control is the main focus (such as post-surgery wound-healing), chlorhexidine mouthwash remains the first choice.

Abstract No. 131

canycani@msn.com

Investigation of trends in education in Japanese dental hygiene schools in accordance with recent regulation amendment

Kaori Yoshiizumi¹, Keiko Endo², Kumiko Sugimoto²

¹Watanabe Dental Clinic, Kasukabe, Saitama, Japan,

²School of Oral Health Care Sciences, Faculty of Dentistry, Tokyo Medical and Dental University, Tokyo, Japan

Objectives: In Japan, the regulation for dental hygienist training schools was amended in 2005. All schools must have extended the length of education to more than 3 years by April 2010. With prolongation in the length of education, each school has tried to improve the curriculum depending on its education philosophy. In order to clarify the trend in education at schools for dental hygienists in Japan, the aim of this study was to investigate which subjects have been enhanced and what additional competencies are planned to be developed.

Methods: The investigation was conducted from October to November 2008. A questionnaire concerning changes in education

content with extension of education length was sent to the curriculum coordinators of all dental hygienist training schools in Japan.

Results: Answers to the questionnaire were obtained from 103 (66.0%) out of 156 schools. The responding schools were 89 vocational schools, 9 junior colleges and 5 colleges (bachelor course). The subjects concerning rehabilitation of aged and disability persons, communication skills and systemic illness have been enhanced in more than half of each type of schools. In colleges, undergraduate research and subjects in liberal arts were more likely to have been improved compared with other types of schools. The competencies that many schools have been focusing on in the new curriculum are: the ability to associate oral health with holistic health, to cooperate with other health professionals, and to find and solve problems.

Conclusions: With the increase in the length of dental hygienist education, more than about half of dental hygienist training schools have enhanced the subjects concerning rehabilitation, communication and systemic illness, and have focused on the competencies of assessing the holistic health, cooperation with other professionals and solving problems. These results suggest that the education for dental hygienists has been changed to meet the needs for dental hygienists in Japan's rapidly aging society.

Abstract No. 138

hbiggar@cdhbc.ca

Preliminary design of a dental hygiene quality assurance program

Heather Biggar*, Sarah Malerby

The College of Dental Hygienists of British Columbia, Victoria, Canada

Objectives: The *Health Professions Act* of British Columbia legislates that all health professions in British Columbia establish and maintain a quality assurance program to promote high practice standards among registrants. The College of Dental Hygienists of BC (CDHBC) has begun to develop a Quality Assurance Program that fulfils the legislation and has the goals of being fair, transparent, and defensible and will ensure protection of the public. A successful Quality Assurance Program (QAP) will ensure that all registrants are practicing dental hygiene at a safe and acceptable level of competence by incorporating professional development and reliable methods of practice assessment. This poster aims to provide details of the proposals.

Methods: The development of the CDHBC QAP will involve defining a set of guiding principles to provide parameters for the detailed program framework. The assessment tool will be developed in collaboration with the National Dental Hygiene Certification Board and will explore current technologies such as computer-based testing, adaptive testing methods and psychometric analysis. Assessment outcomes will then be used to form registrants' continuing competence requirements. A comprehensive communication plan will be implemented to educate registrants regarding the QAP process and requirements. The QAP will be tested using focus groups prior to full implementation and will be regularly evaluated once the program is in place.

Results: The CDHBC QAP will encompass the following elements: assessment & determination of competence, remediation (if required), follow-up evaluation and ongoing continuing competence/professional development. The QAP will measure registrants' abilities in accordance with the BC Dental Hygiene Scope of Practice and Practice Standards. As a result, registrants may be required to participate in prescribed educational activities, be subject to onsite evaluation, peer review or mentoring.

Conclusions: The CDHBC QAP will assess, monitor and enforce standards of practice to ensure the quality of practice and avoid

incompetent, impaired or unethical practice among dental hygiene registrants in British Columbia.

Abstract No. 145

scompton@ualberta.ca

A strategy for increasing dental hygiene research capacity

Sharon M. Compton*, Sandra J. Cobban
University of Alberta, Canada

Introduction/Objectives: Dental hygiene has been acquiring many attributes associated with professions, including self-regulation, autonomy and self-initiation of treatment. However, further progress is impeded due to dental hygiene lagging behind other health professions in both developing a strong cadre of researchers and in development of programmes of research that advance dental hygiene's body of knowledge. Strategic initiatives are necessary to increase capacity for dental hygiene research. The objective of this poster is to suggest how this may be achieved.

Methods: An 'incubator' model from Business was used as a framework for this initiative.

Results: The Alberta Dental Hygiene Research Initiative (ADHRI) has been created as an umbrella organization, with overarching principles, comprising a collective of Research Units. Research Units are headed by tenured dental hygiene faculty members who are Principal Investigators within their own programme of research. Research Associate members include a reference librarian and statistics consultant. Junior faculty members may be Research Associates within existing Research Units. Senior researchers contribute to development opportunities for junior members through provision of research-related professional development and mentoring relationships.

Conclusions: The scope and impact of locally-conducted dental hygiene research is increased by focusing and reporting all research-related outputs through one site. This contributes to socializing dental hygiene students to a culture of faculty research productivity, to enhancing knowledge of dental hygiene research campus-wide, and to promoting dental hygiene research to practice colleagues. Most importantly, in the absence of dental hygiene specific graduate programs in Canada, ADHRI provides a fertile research environment that contributes to building the cadre of researchers that will move our profession forward.

Abstract No. 148

bdaniel@skt.au.dk

New professional opportunities for the dental hygienists in Denmark

Bo Danielsen

School for Dental Assistants, Hygienists and Clinical Technicians, Aarhus University, Aarhus, Denmark

Objectives: In Denmark legislation from 2007 allows Dental Hygienists (DH) to delegate tasks to aids such as dental chair-side assistants (DCA). DHs can also receive dentists' tasks delegated from a dentist. Those who delegate tasks have the responsibility to restrict delegation to aids who are knowledgeable and competent concerning the specific task delegated. In addition they have to supervise the execution of the task. Those who receive a delegated task have the responsibility to refuse to perform the task if they do not feel competent to complete it. The aim of this poster is to summarise the results of studies that investigated to what extent work is delegated in dentistry in Denmark at present.

Methods: Two surveys have been performed amongst DH and DCA in order to investigate the status of delegation in dentistry in Denmark. The Danish Association of Dental Hygienists invited their 832 ordinary members to respond to a web based questionnaire. In addition written questionnaire was given to 550 DCA attending a conference.

Results: One hundred and eighty three DH and 373 DCA responded on the questionnaires. The majority of the responders were employed in private dental clinics (143 (78%) of the DH and 351 (94%) of the DCA). 73 (40 %) of the DH and 90 (24%) of the DCA had been given delegated tasks. The tasks DH were delegated included: operative caries therapy, extraction of mobile and deciduous teeth and some endodontic and prosthodontic procedures. 63 (17%) of the DCA performed supragingival scaling and 52 (14%) did some prosthodontic procedures e.g. took impressions, made and cemented temporary restorations, cemented crowns.

Conclusions: In Denmark, of those who responded to the surveys, a little less than half the DH and around a quarter of the DCA now perform tasks which used to be restricted to Dentists and DH, respectively. This may contribute to more cost-effective dentistry. It may also lead to better employee satisfaction. It is reasonable to assume that even more tasks can be delegated to DH and DCA in the future.

Abstract No. 150

N.Hoenderdos@acta.nl

Complications of oral and peri-oral piercings: a summary of case reports

Nienke L. Hoenderdos*, Dagmar E. Slot, G. Fridus, A. Van der Weijden

Department of Periodontology, Academic Centre for Dentistry Amsterdam, Amsterdam, The Netherlands

Objectives: To perform a systemic search of the literature for case-reports concerning adverse effects associated with oral and peri-oral piercings on oral health and/or general health.

Material and Methods: Pubmed-MEDLINE and the Cochrane Central Register of Controlled Trials (CENTRAL) were searched for papers published before 1 April 2010 to identify appropriate studies. This review was intended to provide a complete summary of case reports in human subjects with oral and/or peri-oral piercings. As outcome measurements the effects on general health and the effects on hard and/or soft tissues of the oral cavity were considered.

Results: Independent screening of the titles and abstracts identified 1169 papers from MEDLINE and 73 papers from CENTRAL. Subsequently, 67 papers describing 83 cases were processed for data extraction. The case reports described complications in oral and general health. In this review, 96 complications from 83 cases were described. Of the 96 reported complications, 81% ($n = 84$) occurred in cases of tongue piercings, 20% ($n = 21$) in cases of lip piercings and 1% ($n = 1$) in a case of other oral piercings. In eight cases, subjects had two oral and/or peri-oral piercings. Gingival recession was the most frequently described complication. Periodontitis and gingival recession were seen at the central mandibular incisors. Tooth fracture was mostly seen in subjects with tongue piercings.

Conclusions: Among the case reports there were serious complications which caused considerable post-operative discomfort and could even have been life threatening. Also, in the long term, the effect on the dentition may eventually result in tooth loss. Therefore oral and/or peri-oral piercings are not without risks. Potential patients should be made aware of this. Those patients wearing a piercing should be screened by a dental professional for possible complications on a regular basis.

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