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The official journal of the Asian Academy of Preventive Dentistry

Instruction for Authors

The International Journal of Oral Health is a peer reviewed journal and the authors are advised to submit manuscripts in the form of original articles, review articles, case-reports, short communications and letters on any aspect related to the oral health.

The Manuscript

All manuscripts submitted to the Journal must comply with these instructions. Failure to do so will result in return of the manuscript and possible delay in publication.

- Manuscripts should be typed on one side only
- Submission should be double spaced
- All margins should be at 3cm on the left-hand side of the page
- All pages should be numbered consecutively in the top right-hand corner, beginning with title page
- Submit 2 hard copies and 1 soft copy on a diskette/CD in Microsoft Word 2007 format.
- Articles should be not more than 3000 words
- Arrange the paper in this order: (i) title page; (ii) abstract and keywords; (iii) text; (iv) acknowledgement; (v) references; (vi) tables; (vii) figures; and (viii) legends.

The Title Page

The title page should include the title of the paper, full first name and surname of each author, name of authors' departments and institutions, correspondence address, telephone number, facsimile number, and e-mail address of the author who will be responsible for all correspondence regarding the manuscript.

The Abstract

An abstract should not exceed 250 words in length and must state purpose, methodology, main findings and conclusion of the study. The abstract should not contain abbreviations and references. Five key words should be supplied below of the abstract.

The Text

In the manuscript, use only Systeme Internationale (SI) Units and standard abbreviations. The full term for which an abbreviation stands should precede its first use in the text unless it is a standard unit of measurement.

The References

The Vancouver system of referencing should be used (examples are given below). In the text, references should be cited using superscript Arabic numerals in the order in which they appear. If cited in tables or figure legends, number according to the first identification of the table or figure in the text. In the reference list when there are more than six authors to a paper, cite the first three, then indicate et al. All citations mentioned in the text, tables or figures must be listed in the reference list. In general, abstracts are not acceptable as references. Limit to 30 references only.

Example of the style:

1. Journal:
Sakai O, Akihito T, Sakuma S et al. The results of a 17-year fluoride mouthrinsing program for Japanese school children in a community. *Journal of Dental Health* 1988; 38: 116-126.
2. Book:
Grant DA, Stern IB, Listgarten MA. *Periodontics*. 6th edn. St Louis: Mosby, 1988.
3. Websites:
when referring to a website, include the date it was accessed. If the website only is cited, it should appear as a footnote. If the website is additional to a reference, it should be included he reference as follows: National Oral Health Survey of schoolchildren 1997(NOHSS '97). Oral Health Division, Ministry of Health, Malaysia. National Oral Health Survey of Schoolchildren 1997(NOHSS '97). URL:'http://www...Accessed June 2010.

Tables and Figures

Each table should be started on a new page and numbered

consecutively and should be completely labeled so as to be comprehensible without reference to the text. Footnote symbols: †, ‡, §, ¶, should be used (in that order) and *, **, *** should be reserved for P-values.

All illustrations (line drawings and photographs) are classified as figures. Figures should be cited in consecutive order in the text and should be on a separate sheet of paper. Submit good quality original or glossy print reproduction. Photocopies of illustrations are not acceptable.

Manuscript Categories and Preparation

Original Articles

Scientific articles are papers that report significant clinical or basic research in dentistry. They should contain the following sections: (i) structured abstract, consisting of no more than 250 words divided into four paragraphs (background, methods, results and conclusions); (ii) introduction; (iii) materials and methods; (iv) results; (v) discussion; and (vi) references (no more than 30).

Reviews

Generally, review articles intended to be focused on reviews of basic and clinical science related to all aspects of dentistry. Reviews should be no more than 10 Journal pages in length including figures, tables and references. They should contain the following sections: (i) abstract (350 words or less); (ii) introduction; (iii) body; and (iv) references.

Case Reports and Clinical Notes

Case reports and clinical notes manuscripts will emphasize all aspects of clinical dentistry. They should describe: (i) unique cases; (ii) expected association of two or more diseases; (iii) adverse or unexpected treatment response; (iv) any other clinical observation based upon well-documented cases that provides important new information; or (v) a new or revised clinical technique or procedure. They should be concise and occupy no more than three Journal pages.

Case reports and clinical notes should contain the following sections; (i) structured abstract consisting of no more than 250 words and four paragraphs (background, methods, results and conclusions); (ii) introduction; (iii) case description and results; (iv) discussion; and (v) references.

Letters to the Editor

Letters may comment on articles published in the Journal and should offer constructive criticism. When appropriate, comment on the letter is sought from the author. Letters to the Editor may also address any aspect of the profession, including education, new modes of practice and concepts of disease and its management. Letters should be brief (no more than two A4 pages).

Proofs

It is essential that corresponding authors supply an e-mail address to which correspondence can be emailed while their article is in production. Word files of edited articles will be sent for checking via e-mail, and should be returned to the Editorial Office.

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Volume 12

May 2016

THE INTERNATIONAL JOURNAL OF ORAL HEALTH

Proceedings of the 12th International Conference
of Asian Academy of Preventive Dentistry

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The 12th International Conference of Asian Academy of Preventive Dentistry (12th AAPD)

in a Joint Meeting with the 65th Japanese Society for Oral Health Conference
(65th JSOH)

Welcome message



Dear friends and colleagues,

On behalf of the Organizing Committee, we are delighted to welcome you to join the 12th International Conference of Asian Academy of Preventive Dentistry (12th AAPD), at Tokyo Medical and Dental University during May 27-29, 2016 in Japan. The main theme of the 12th AAPD is *"The better oral health, the happier daily life"*.

The AAPD Conference has been held every 2 years among Asian countries. Japan hosted the AAPD twice in Fukuoka (1994) and Okayama (2006) before. This is the third time Japan will host the AAPD and Tokyo (Capital city) was selected as the conference venue.

In 2016, we are planning to hold the 12th AAPD as a joint meeting of the 65th JSOH (Japanese Society for Oral Health) conference. The scientific programs are the followings: Keynote speech, Special lectures, Forum, Joint Symposiums, Education seminar, Oral and Poster sessions. All of you may take this great opportunity to freely exchange your innovative thoughts, enhance mutual understanding and further promote research collaborations, thereby contributing to optimal oral and general health of the people we serve. We will also organize welcome reception & cultural night, and Tokyo Bay dinner cruise as social events.

In the conference, distinguished international experts as well as renowned local researchers will give us special lectures to share their experiences and knowledge. We would like to discuss the recent research topics about preventive dentistry and contribute to promote oral health among the Asian population. We believe that AAPD would bring a new international perspective on oral health, dental practice and public health politics to Asian communities.

AAPD also provides an opportunity to strengthening the relationship and building up academic networking among people in the field of preventive dentistry. Tokyo, the capital city of Japan, is an attractive place, and we believe all participants will enjoy the city life of Tokyo, for eating, shopping and sight-seeing.

We will express our sincere gratitude to all of you for your valuable participation. We hope the 12th AAPD will become a fruitful conference and all the participants will be satisfied with it.

Yours sincerely,

Yoko Kawaguchi DDS, PhD
President of the 12th AAPD
Professor of Department of Oral Health Promotion
Tokyo Medical and Dental University (TMDU)

**Proceedings of the
12th International Conference of Asian
Academy of Preventive Dentistry**

**27-29 May 2016
Tokyo Japan**

The better oral health, the happier daily life

Plenary programs

Forum: Current Situation and Future Challenges in Japanese Dentistry

May 27 (Fri)

Room A (M&D Tower 2F)

9 : 15 ~ 12 : 00

Chair: F. A. Clive Wright (University of Sydney, Australia)

Bazar Amarsaikhan (Mongolian National University of Medical Sciences, Mongolia)

Speaker: Yoshinori Toriyama (Ministry of Health, Labour and Welfare, Japan)

Kakuhiko Fukai (Fukai Institute of Health Science, Japan)

Masahito Sumitomo (Japanese Association for Dental Science, Japan)

Chair: Shin Seung-chul (Dankook University, Korea)

Tao Xu (Peking University, China)

Speaker: Takashi Zaitu (Tokyo Medical and Dental University, Japan)

Koichi Nakakuki (Tokyo Medical and Dental University, Japan)

Jun Aida (Tohoku University Graduate School of Dentistry, Japan)

**Joint Symposium 1: Dental Perspective of Tobacco Control as Common Risk
Factor Approach**

May 27 (Fri)

Room A (M&D Tower 2F)

13 : 30 ~ 15 : 30

Chair: Hiroshi Ogawa (World Health Organization)

Waranuch Pitiphat (Khon Kaen University, Thailand)

Speaker: Noor Aliyah Binti Ismail (Ministry of Health, Malaysia)

Yong Duk, Park (Kyung Hee University, Korea)

Takashi Hanioka (Fukuoka Dental College, Japan)

Joint Symposium 2: Strategies and Approaches for Tackling Dental Diseases

May 28 (Sat)

Room A (M&D Tower 2F)

13 : 30 ~ 15 : 30

Chair: Rahimah Abdul-Kadia (Lincoln University College, Malaysia)

Manabu Morita (Okayama University, Japan)

Speaker: Mike Morgan (The University of Melbourne, Australia)

Chu, Chun Hung (The University of Hong Kong)

Yao-Hui Huang (Taipei Medical University)

Shin, Seung-Chul (Dankook University, Korea)

Joint Symposium 3: Quality Assurance of Education in Community Dentistry

May 29 (Sun)

Room B (M&D Tower 2F)

9 : 00 ~ 11 : 00

Chair: Armasastra Bahar (University of Indonesia, Indonesia)

Atsuo Amano (Osaka University, Japan)

Speaker: Melissa Adiatman (Universitas Indonesia, Indonesia)

Waranuch Pitiphat (Khon Kaen University, Thailand)

Shuguo Zheng (Peking University, China)

Ikuko Morio (Tokyo Medical and Dental University, Japan)

Education Seminar: Deciduous Tooth is Parent of Permanent Tooth

May 27 (Fri)

Room C (M&D Tower 2F)

13 : 30 ~ 14 : 00

Chair: Thongchai Vachirarojpisan (Thai Dental Council, Thailand)

Speaker: Mizuho Nishino (Tokushima University, Japan)

Keynote Speech

May 28 (Sat)

Room A (M&D Tower 2F)

9 : 00 ~ 10 : 30

Chair: Kim John-Bai (Seoul National University, Korea)

Itsuo Chiba (Health Sciences University of Hokkaido, Japan)

Speaker: Hiroshi Ogawa (World Health Organization)

Tin Chun Wong (FDI World Dental Federation)

Yoshimitsu Abiko (Nihon University, School of Dentistry at Matsudo, Japan)

Special Lecture : Oral-systemic Health Linkage and Oral Health Strategy in Aged Society

May 28 (Sat)

Room A (M&D Tower 2F)

11 : 00 ~ 12 : 00

Chair: Prathip Phantumvanit (Thammasat University, Thailand)

Speaker: Hideo Miyazaki (Niigata University, Japan)

Oral presentation programs

Oral presentation

May 27 (Fri)

Room C (M&D Tower 2F)

11 : 00 ~ 11 : 24

Chair : Satoru Haresaku (Fukuoka Dental College, Japan)

- AO-1 How social determinants affecting dental caries at rural and urban areas
R. Putri Noer Fadilah¹⁾, Azkya Patria Nawawi¹⁾, Ratih Widyasari²⁾
¹⁾Department of Dental Public Health, School of Dentistry, University of Jenderal Achmad Yani, West Java, Indonesia, ²⁾Department of Conservative Dentistry, School of Dentistry, University of Jenderal Achmad Yani, West Java, Indonesia
- AO-2 Confidence in discussing oral cancer-associated behaviours among Australian Oral-Health Professionals
Rodrigo Mariño¹⁾, Satoru Haresaku²⁾, Roisin McGrath¹⁾, Denise Bailey¹⁾, Michael Morgan¹⁾, Michael McCullough¹⁾, Ross Musolino³⁾, Boaz Kim¹⁾
¹⁾Melbourne Dental School, University of Melbourne, Australia, ²⁾Department of Public Health & Human Sciences, Fukuoka Dental College, Japan, ³⁾eviDent Foundation, South Yarra, Australia

11 : 24 ~ 12 : 00

Chair : Toshihiro Ansai (Kyushu Dental University, Japan)

- AO-3 An Indonesian version of the Health Literacy Dental Scale (HeLD): Cross adaptation, assessing validity and reliability
Melissa Adiatman, Diah Ayu Maharani, Anton Rahardjo, Syifa Adinda
Department of Dental Public Health and Preventive Dentistry, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia
- AO-4 Oral health behaviour change with individual approach among 12 years
Azkya Patria, Rina Putri
Department of Oral Health, School of Dentistry, University of Jendral Ahmad Yani, Indonesia
- AO-5 Planning oral health preventive program by using sociodental risks groups approach
Rosa Amalia¹⁾, Rob M.H. Schaub²⁾, Niken Widyanti¹⁾, Johan W. Groothoff³⁾
¹⁾Department of Preventive and Community Dentistry, Faculty of Dentistry, Universitas Gadjah Mada Yogyakarta, Indonesia, ²⁾Center for Dentistry & Oral Hygiene, University Medical Center Groningen, University of Groningen, Netherlands, ³⁾Department of Health Sciences, Community and Occupational Health, University Medical Center Groningen, University of Groningen, Netherlands

14 : 36 ~ 15 : 24

Chair : Yoshihisa Yamashita (Kyushu University, Japan)

- AO-6 Prevalence and severity of Early Childhood Caries (ECC) in 6- to 24-month-old children in DKI Jakarta
Febriana Setiawati S¹⁾, Heriandi Sutadi²⁾, Anton Rahardjo¹⁾
¹⁾Department of Dental Public Health and Preventive Dentistry, Faculty of Dentistry, Universitas Indonesia, Indonesia, ²⁾Department of Pediatric Dentistry, Faculty of Dentistry, Universitas Indonesia, Indonesia

- AO-7 Curriculum development of improving comprehensive administration of patients with high risk of caries
Si Yan, Yuan Chao, Chen Xiaochi, Yu Shunlan, Zheng Shuguo
Department of Preventive Dentistry, Peking University School and Hospital of Stomatology (PKUSS), Beijing, China
- AO-8 The effectiveness of the SDF in inhibiting caries activity on primary teeth of kindergarten students in Banjar regency
Risqa Rina Darwita¹⁾, Carolina Ayu Rahmawati¹⁾, Anton Rahardjo¹⁾, Rahimayanti²⁾, Peter Andreas¹⁾, Armasastra Bahar¹⁾
¹⁾Department of Preventive and Public Health Dentistry, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia, ²⁾Health Department of Banjar Regency, South Kalimantan, Indonesia
- AO-9 Oral health improvement approach to the children under 60 month through tailored message
Peter Andreas, Risqa Rina Darwita
Departemen Ilmu Kesehatan Gigi Masyarakat dan Kedokteran Gigi Pencegahan Fakultas Kedokteran Gigi Universitas Indonesia, Indonesia

May 28 (Sat)

Room C (M&D Tower 2F)

9 : 12 ~ 9 : 36

Chair : Kayoko Shinada (Tokyo Medical and Dental University, Japan)

- AO-10 Efficacy of mouth rinse formulation based on cetyl pyridinium chloride in the control of plaque as an early onset of dental calculus built up
Anton Rahardjo¹⁾, Diah Ayu Maharani¹⁾, Melissa Adiatman¹⁾, Yuniardhini S Wimardhani²⁾, Siti Alia Ramadhani¹⁾
¹⁾Department of Dental Public Health and Preventive Dentistry, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia, ²⁾Department of Oral Medicine, Faculty of Dentistry, Universitas Indonesia, Jakarta, Indonesia
- AO-11 The development of instructional media by an audio dentoform of tooth brushing technique
Praweena Sopapornamorn, Panom Samphatsim, Pimchanok Tamma, Natcha Bothai, Jutharat Chimruang, Hathairat Lekatana
Faculty of Dentistry, Naresuan University, Thailand

9 : 36 ~ 10 : 12

Chair : Akihiro Yoshihara (Niigata University, Japan)

- AO-12 Comprehensive prevention for oral disease of children in China
Shuguo Zheng
Department of Preventive Dentistry, Peking University School of Stomatology, China
- AO-13 Factors associated with oral health status in Vietnamese schoolchildren
Thuy Anh Vu Pham
Faculty of Odonto-Stomatology, University of Medicine and Pharmacy, Ho Chi Minh City, Vietnam
- AO-14 Association of dental fluorosis and caries at rural and urban areas
Ratih Widayarsi¹⁾, R. Putri Noer Fadilah²⁾
¹⁾Department of Conservative Dentistry, School of Dentistry, University of Jenderal Achmad Yani, West Java, Indonesia, ²⁾Department of Dental Public Health, School of Dentistry, University of Jenderal Achmad Yani, West Java, Indonesia

10 : 12 ~ 11 : 00

Chair : Shouji Hironaka (Showa University, Japan)

- AO-15 Oral health status for disabled persons in Korea
Kim Jeong Woo, Sim Kyu Hyeon, Choi Gil Bok
Department of Oral Health, Dankook University, Korea
- AO-16 Psychosocial impact of dental aesthetics among patients attending USIM dental clinic
Azrul Hafiz b. Abdul Aziz¹⁾, Nurazfalina Azura bt. Abdul Aziz²⁾
¹⁾Department of Orthodontics, Faculty of Dentistry, Islamic Sciences University of Malaysia, Malaysia, ²⁾Faculty of Dentistry, Islamic Sciences University of Malaysia, Malaysia
- AO-17 Better oral health better performance: A preventive dentistry for football players
Patcharaphol Samnieng
Faculty of Dentsitry, Naresuan University, Thailand
- AO-18 Dental anxiety among an adult population using the Modified Dental Anxiety Scale
Rashidah Esa¹⁾, Noor Mawarni Abdul Jalil²⁾, Noorefizah Nazar²⁾
¹⁾ Department of Community Oral Health and Clinical Prevention, University of Malaya, Malaysia, ²⁾Oral Health Division, Ministry of Health, Malaysia

11 : 12 ~ 11 : 48

Chair : Hirohisa Arakawa (Kanagawa Dental University, Japan)

- AO-19 Coverage and efficacy of differing models of dental services available to residents of aged care facilities available in NSW
Garry Gordon Law
Centre for Education & Research on Ageing Concord Repatriation General Hospital, Australia
- AO-20 Social stratification, oral hygiene behavior and oral health status among older adults in China
Ying Zhang¹⁾, Bei Wu²⁾, Hanzhang Xu²⁾, Min Cheng³⁾, Yan Li⁴⁾
¹⁾Department of Preventive Dentistry, Shanghai Stomatological Hospital, Fudan University, China, ²⁾Duke University, School of Nursing and Global Health Institute, USA, ³⁾Department of Preventive Dentistry, School of Stomatology, Jilin University, China, ⁴⁾Heilongjiang Provincial Oral Disease Prevention Hospital, China
- AO-21 Are older men who claim good oral health actually happier?
Clive Wright, Vasant Hirani, Fiona Blyth, Fiona Stanaway, Robert G. Cumming
Centre for Education & Research on Ageing, University of Sydney, Australia

13 : 54 ~ 14 : 06

Chair : Tetsunori Ozaki (Nihon University, Japan)

- AO-22 A randomized trial of smoking cessation interventions conducted by dentists
Nurul Asyikin Yahya^{1,3)}, Roslan Saub¹⁾, Mariani Mohd Nor²⁾, Lydia Mason⁴⁾, Mazlina Mat Desa⁴⁾, Morni Abd Rani⁴⁾, Rozihan Mat Hasan@Husin⁴⁾
¹⁾Department of Community Oral Health and Clinical Prevention, Faculty of Dentistry, University of Malaya, Malaya, ²⁾Department of Education Psychology & Counselling, Faculty of Education, University of Malaya, Malaya, ³⁾Department of Dental Public Health, Faculty of Dentistry, Universiti Kebangsaan Malaysia, Malaya, ⁴⁾Division of Dentistry, Selangor State Health Department, Ministry of Health Malaysia, Malaya

15 : 06 ~ 15 : 30

Chair : Naofumi Tamaki (Tokushima University, Japan)

AO-23 Knock-out of *ureI* from *Streptococcus salivarius* urease gene

Yan Wang

Department of Preventive Dentistry, Shanghai Stomatological Hospital, China

AO-24 Anti-oxidant activities of Bromelain, its potential as anti-inflammatory and anti-carcinogenic agent

Jung-Ha Lee, Se-Yeon Kim, Eun-Joo Jun, Seung-Hwa Jeong, Jin-Bom Kim

Department of Preventive and Community Dentistry, School of Dentistry, Pusan National University,
Yongsan, Korea

Poster presentation programs

Poster presentation

May 27 (Fri) : AP1-46, May 28 (Sat) : AP47-71

Venue (M&D Tower 26F)

9 : 30 ~ 16 : 30

- AP-1 Mothers' influence on oral health among indigenous schoolchildren
Noriah Yusoff¹⁾, Haslina Rani¹⁾, Norintan Ab-Murat²⁾, Sharol Lail Sujak³⁾, Rahimah Abdul Kadir⁴⁾
¹⁾Department of Dental Public Health, Faculty of Dentistry, University Kebangsaan Malaysia, Malaysia, ²⁾Department of Community Oral Health and Clinical Prevention, Faculty of Dentistry, University of Malaya, Malaysia, ³⁾Oral Health Division, Ministry of Health, Malaysia, ⁴⁾Faculty of Dentistry, Lincoln University College, Malaysia
- AP-2 Motivation of young patients with early permanent dentition seeking orthodontic treatment
Wei Jiang, Yueling Li, Xiaoyan Mao
Shanghai Jiading Dental Diseases Prevention and Cure Center, China
- AP-3 Association between number of present teeth and self-rated oral health
Se-Yeon Kim, Jung-Ha Lee, Eun-Joo Jun, Seung-Hwa Jeong, Jin-Bom Kim
Department of Preventive and Community Dentistry, School of Dentistry, Pusan National University, Yansan, Korea
- AP-4 Study on the effectiveness of the Dietary Education Support Program to improve athletic ability
Miyuki Kibayashi
University of Shizuoka, Junior College, Department of Dental Hygiene, Japan
- AP-5 A report on Oral Health Care Activities to rural community of Myanmar by Dental Public Health Sector (DPHS), Myanmar Dental Association (Central) for the year of 2015
Aung Than
Dental Public Health Sector, Myanmar Dental Association (Central), Myanmar
- AP-6 The prevalence, knowledge, opinions and recognition of C-type hepatitis among Korean and Mongolian
Yu Jeong Lee
Dankook University, Korea
- AP-7 Barriers of implementation and reasons for non-compliance among toddlers recruited in "Toddlers Adoption Programme": Dental nurse perceptions
Rapeah MY.¹⁾, Ernieza B.²⁾, Low LL.³⁾
¹⁾Oral Health Division, Pahang State Health Department, Malaysia, ²⁾Klinik Pergigian Indera Mahkota, Kuantan, Pahang, Malaysia, ³⁾Institute of Health System Research, Ministry of Health, Malaysia
- AP-8 Evaluation of 2015 oral health education program for elementary school in Korea
Jung-Eun Park¹⁾, Jong-Hwa Jang²⁾, Yong Duk Park¹⁾
¹⁾Department of Preventive and Social Dentistry, School of Dentistry, Kyung Hee University, Korea, ²⁾Department of Dental Hygiene, Hanseo University, Korea
- AP-9 Empowering kindergarten teachers to deliver oral health education to children
Kitty J Chen¹⁾, Shinan Zhang²⁾, Sherry S Gao¹⁾, Duangporn Duangthip¹⁾, CH Chu¹⁾
¹⁾Faculty of Dentistry, The University of Hong Kong, China, ²⁾Faculty of Stomatology, Kunming Medical University, China

- AP-10 Dentist's opinions for the roles of the dental hygienist and dental assistant at the dental clinic, in Mongolia
Youn Hwa Ha
Department of Oral Health, Graduate School, Dankook University, Korea
- AP-11 Oral health promotion in the interprofessional education
Yupin Songpaisan, Wantana Puthipad, Orkarn Suebsamarn, Prathip Phantumvanit
Institute of Dentistry, Suranaree University of Technology, Nakhon Ratchasima, Thailand
- AP-12 Diet control program through the cariogenic potentiality index for each food in adults
Shim Su-Hyun
Department of Preventive Dentistry, Graduate School Dankook University, Korea
- AP-13 Consumer using evaluation of brush-off patch type dentifrice
Jae-Hyun Ahn, Jong-Hoon Kim, Ji-Young Kim, Tae-Hoon Kim
LG Household & Health Care Research Park, Korea
- AP-14 No! 333, Yes! 123 in Tooth Brushing Campaign
Yong-Duk Park¹⁾, Chang-Woog Kim¹⁾, Yong-Jun Choi¹⁾, Jeong-Uk Heo¹⁾, Huyn-Ju Park¹⁾,
Jung-Eun Park¹⁾, Yoo-Seok Kim¹⁾, Kyung-Sook Hwang²⁾
¹⁾Department of Preventive and Social Dentistry, School of Dentistry, Kyung Hee University, Seoul, Korea, ²⁾Department of Dental Technology, Shin Han University, Uijeongbu, Korea
- AP-15 Clinical study on fluoride iontophoresis method for Lao children
Woo-Ryung Park¹⁾, Eun-Joo Na¹⁾, Jee-Hyun Lim¹⁾, Na-Young Kim¹⁾, Mi-Hea Yoon¹⁾, Ja-Won Cho²⁾
¹⁾Department of Oral Health, Graduate School, Dankook University, Korea, ²⁾Department of Preventive Dentistry, College of Dentistry, Dankook University, Korea
- AP-16 Dental survey of the adolescent at Gwangju-si for water fluoridation
Hyun-Ju Park¹⁾, Eun-Kyeong Han¹⁾, Myung-Gu Lee¹⁾, Ja-Won Cho²⁾
¹⁾Department of Oral Health, Graduate School, Dankook University, Korea, ²⁾Department of Preventive Dentistry, College of Dentistry, Dankook University, Korea
- AP-17 Caries preventive effect of a 6-year water fluoridation program
Jin-Bom Kim, Jung-Ha Lee, Se-Yeon Kim, Eun-Joo Jun, Seung-Hwa Jeong
Department of Preventive and Community Dentistry, School of Dentistry, Pusan National University, Yangsan, Korea
- AP-18 Outreach service to promote oral health for kindergarten children
Sherry S Gao, CH Chu, Edward CM Lo
Faculty of Dentistry, The University of Hong Kong, China
- AP-19 Oral health index for kindergarten and school children by use of the computer program for incremental dental care system
Joo-Hee, Hwang
Department of Oral Health, Graduate School, Dankook University, Korea
- AP-20 Contribution of Nasi Papah tradition towards the occurrence risk of Early Childhood Caries (ECC) at Senyuir village—Lombok Timur 2015
Gita Sjarkawi¹⁾, Armasastra Bahar²⁾, Herry Novrinda²⁾
¹⁾Magister Programme of Community Dentistry, University Indonesia, Indonesia, ²⁾Department of Preventive Dentistry, Faculty of Dentistry, University Indonesia, Indonesia
- AP-21 Early childhood caries among 5- to 6-year-old children in Southeast Asia
D. Duangthip, S.S. Gao, E.C.M. Lo, C.H. Chu
Faculty of Dentistry, The University of Hong Kong, Hong Kong SAR, China

- AP-22 Investigation and analysis of dental caries present status of students in Jiading District of Shanghai in 2014-2015
Du Qin
Jiading District Dental Hospital, Shanghai, China
- AP-23 The development and utilization of the computer program for dietary control on the prevention of dental caries for the children
Hye-Sook Kwon¹⁾, Kyung-Hui Moon¹⁾, Ja-Won Cho²⁾
¹⁾Department of Oral Health, Graduate School, Dankook University, Korea, ²⁾Department of Preventive Dentistry, College of Dentistry, Dankook University, Korea
- AP-24 Analysis on the dental condition of middle and primary schools and kindergartens in Jiading District among 2010 to 2012
Yueling Li, Ming Yu, Qin Du, Hua Dong, Yidan Li
Shanghai Jiading Dental Diseases Prevention and Cure Center, China
- AP-25 Oral health status and OHRQoL among indigenous children in Malaysia
Eizatul AB Nordin, Lily A Shoab, Zamros YM Yusof, Nor M Manan, Mohamed NH
Faculty of Dentistry, University of Malaya, Kuala Lumpur, Malaysia
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Department of Oral Health, Dankook University, Korea
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Eun-Gyul Jeong¹⁾, Seung-Chul Shin²⁾, Ja-Won Cho²⁾, Yoeng-su Jang¹⁾
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- AP-41 A case report on volatile sulfide compounds changes in breath
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Byeng-Kem Cho¹⁾, Cheon-Hee Lee²⁾, Ji-Hyeon Park³⁾, Su-Kyung Jwa⁴⁾, Ja-Won Cho¹⁾
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- AP-46 Antibacterial effects of *Streptococcus salivarius* K12 on oral bacteria
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- AP-48 The effect of milk intake on the dental caries environment
Ki-Eun Kim, Jung-Eun Park, Yong-Duk Park
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Su Yeon, Park
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Yang Yu¹⁾, Xiaoling Wang¹⁾, Chunling Ge²⁾, Bing Wang²⁾, Chuoyue Cheng¹⁾, Ye-Hua Gan³⁾
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- AP-51 Effects of whitening strip with desensitizing primer on tooth color
Sang-Uk Im¹⁾, Eun-Kyung Kim²⁾, Jong-Hun Kim³⁾, Jae-Hyun Ahn³⁾, Keun-Bae Song¹⁾
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Digital Dental Office, Ulaanbaatar, Mongolia
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- AP-55 Putative periodontopathic bacteria and herpesviruses in pregnant women
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- AP-56 Effect probiotic *Lactobacillus paracasei* on mutans streptococci in young children
Supatcharin Piwat^{1,2)}, Rawee Teanpaisan^{1,3)}, Nuchnaree Akkarachaneeyakorn^{1,2)},
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- AP-57 Effect probiotic *Lactobacillus paracasei* on dental caries in young children
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Center, Mongolia, ⁴⁾Etugen University, Mongolia, ⁵⁾Отгочманрамба University of Traditional Mongo-
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lia, ⁵⁾Tsahiur Dental Clinic, Mongolia, ⁶⁾Khash –Erdene Dental Clinic, Mongolia
- AP-60 To assess risk factors associated and determined clinical forms of the oral leukoplakia
Munkh-Oyun G¹⁾, Batsuuri M¹⁾, Handdorj H²⁾, Urjinkham J³⁾, Punsaldulam Kh⁴⁾
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- AP-61 The study of clinical features of oral candidiasis
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- AP-62 Dental erosion in young adult in Shanghai
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- AP-63 Oral health status and oral health related quality of life (OHRQoL) in Malaysian obese adolescents
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- AP-64 Effectiveness of Silver-diamine-fluoride in arresting caries in heart disease children
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- AP-65 The oral health of Chinese children with disabilities
Xuenan Liu
Peking University School and Hospital of Stomatology, China
- AP-66 The efficacy of nano hydroxyapatite fluoride dentifrice for artificial caries by QLF
Xuejun Liu¹⁾, Jinpu Chu¹⁾, Virginia Barnes²⁾, Yanfang Ren²⁾
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- AP-67 The closing and the remineralization effect of the dentinal tubule by use of Sensodyne dentifrice
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- AP-68 Stain on dentin after silver diammine fluoride and potassium iodide
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- AP-69 The effects of commercial red ginseng beverage on bovine enamel surface
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- AP-70 Analysis of CPP-ACP complex + Ethanolic Propolis Extract gel effectivity to enamel remineralization
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- AP-71 The impact of chewing ability on cognitive function of rural elderly people in Korea
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Forum

Dental Health in the Super Aging Society

Yoshinori Toriyama

Ministry of Health, Labour and Welfare (MHLW)

Promoting comprehensive medical and nursing care law acted in June 2014. Dentists have to cooperate with medical doctors, nurses and care personnel as the member of the comprehensive care team.

Four years and several months have passed since Dental Health Promotion Law acted. In October 2015, the office of Dental Health Promotion was organized part of the division of Dental Health (MHLW).

In 2014, oral health checkups for persons aged 75 or older started, dentists checkup teeth, gingiva and oral hygiene to prevent oral dysfunction and pneumonia for elderly persons. The latest stage medical care unions in the prefecture entrusted these checkups to the cities and the dentist association. MHLW released “frail” to Council on Economic and Fiscal Policy in July 2015. Frail consists of decline in oral function, low nutrition, increase of fall, decline in cognitive function. MHLW will promote related policies in the near future.

In dental treatment, most of dentists regard recovering a tooth form as recovering oral function. It is not sufficient to approach to the patients in the view of oral function. To suggest dental health in the super aging society, I proposed “future dental care elderly model” in November 2011.

The dental treatment fee was amended in April 2012 in reference to this model. In the same time, oral management for peri-operative patients started. A dentist joins the medical team by supporting care for medical patients.

Forum

Oral Health for Achieving Healthy Longevity in an Aging Society: Evidence and Policy

Kakuhiro Fukai

Fukai Institute of Health Science

Accumulated evidence from the past decade suggests that there are several pathways which connect dental care and oral health with healthy life expectancy: (1) age-related changes and aging, (2) life expectancy, (3) NCDs as the main causes of death and the risk factors thereof, (4) diseases that cause conditions requiring long-term care, (5) health promotion activities such as exercise, nutrition, and rest, (6) socioeconomic factors, and (7) the effects of dental care.

Even as researchers continue to accumulate this evidence, health professionals should begin using the existing evidence to update clinical practice. Policymakers and other stakeholders can also use this evidence in their lobbying, advocacy, and policymaking activities. Those new evidencebased practices and policies can in turn generate new research and the further accumulation of evidence, completing the cycle.

As we face the rapid aging of our population, which is proceeding at a rate never before experienced by humankind, many efforts to deal with this problem have been initiated in various fields of academic research as well as in medical, health, welfare, and community settings. Specific policy measures that should be prioritized in order to promote healthy longevity include: (1) extension of life expectancy and prevention of diseases causing premature death, (2) prevention of conditions that necessitate long-term care, (3) prevention of a decline in daily living activities, and (4) life-long health promotion from the viewpoint of a life course approach. What is most required at this time is the development and implementation of these measures, the enactment of health policy, and the accumulation of evidence that demonstrates causal relationships and evaluates cost-effectiveness.

Forum

Taking a Bird's Eye View of Society in Order to Coordinate Specialized and Authorized Organizations of the Japanese Association for Dental Sciences

Masahito Sumitomo
Japanese Association for Dental Science

Currently the Association has five standing committees, and 17 ad hoc committees that reflect the features of our leadership. I would like to take this opportunity to introduce our activities and objectives in relation to children and the elderly, and convey some aspects of our future direction.

A survey conducted by the Priority Research Committee revealed that disorders related to putting food in the mouth, chewing, and swallowing can be found not only among children with disabilities but among other children as well. We will examine and implement the following based on this data, and thereby further expand our activities.

(i) We shall utilize such resources as the Association website, launch a frequently asked questions (FAQ) website, and work to raise public awareness and rectify feeding problems among children.

(ii) As different countermeasures are needed for different feeding problems among children, we shall work to build methods for the classification of problem stages, and assessment systems aimed at making improvements with regard to functional problems related to putting food in the mouth, chewing, and swallowing.

(iii) In order to help dentists and multidisciplinary professionals train and study diligently, we shall build a training system aimed at ameliorating feeding problems, hold training workshops, and propose undergraduate and postgraduate lifelong education systems.

The Association espouses the concept of "oral health management" and will communicate this to society in terms understandable not only to dentistry professionals but to professionals across multiple disciplines. Also, we will listen to a wide range of opinions from dentists and professionals across multiple disciplines, and the general public, and show how dentistry is able to cooperate and contribute.

Furthermore, with society progressively aging, there will be more opportunities to provide dental care to patients with NCDs and other systemic diseases. Many aspects of the home dental care being promoted by the Japanese government involve high levels of risk. In order to overcome this, the Japanese Association for Dental Science will, with the help of its specialized and authorized organizations, build ongoing lifelong training systems for members of the Japan Dental Association.

Forum

Space Dentistry—Teledental System in Space and Antarctic Environments—

Takashi Zaitso
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Space dentistry is the area of study which conducts oral health research and management in the space environment. There is little reported research in this area of dentistry, however the National Aeronautics and Space Administration (NASA) has identified 6 dental issues (Abscess, Avulsion/ Tooth Loss, Caries, Crown Replacement, Exposed Pulp/Pulpitis and Filling Replacement) as the most important dental incidents to be dealt with in long-term missions in space.

The focus for oral health management for astronauts involves conducting an oral diagnosis on the basis of a dental examination and dental orthopantomogram. However, the systematic program to evaluate the risk of oral problems in spacecraft and the protocol to prevent oral problems and incidents in the space environment, are still far from sufficient.

To promote the oral health of astronauts, the "Space Oral Health Promotion (SOHP) project" which tackles the research tasks and the operational countermeasures in space dentistry, was launched in 2012. In the SOHP project, the dental team of Tokyo Medical and Dental University, and the health management teams of Japan Aerospace Exploration Agency (JAXA) cooperate to develop the countermeasures against the current and the potential dental/oral problems which could arise in future long-term space flights. We developed an oral self checkup program for astronauts to use in the environment without a dentist.

Moreover, as similar conditions apply in isolated Antarctic exploration, the authors developed dental diagnosis protocols/kits and a dental telediagnosis system for the wintering team personnel of the Japanese Antarctic Research Expedition for their stay in an enclosed and isolated environment.

The oral health countermeasures for these special environments will contribute to the dental care in remote area or disaster dentistry in the future.

Forum

Disaster Dentistry—Standardized Dental Healthcare Management System by Japanese Experience—

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After the Great East Japan Earthquake, the first systematic dental professional dispatch to supply dental healthcare service to the affected population was attempted by a collaboration between the Ministry of Health and the Japan Dental Association. In the meantime, restoration or reconstruction of the dental clinics in the affected area, and dental consultation and health service at the temporary housings, were supported by the governmental special fund.

These trials were beneficial to help the people to maintain their dental health, but it was not enough. To make the system better, we discussed and proposed a nationwide standardized dental healthcare management system, followed by dental rapid assessment system after large-scale disasters. Multi-institutional council was established to organize the maintained continuous support by dental associations, hospitals, universities, and public dental health sector workers. Sharing information, coordinating, and educational system are also discussed with the council, to provide better dental healthcare service even right after the disaster.

Here we are presenting the progress five years after The Great East Japan Earthquake.

Forum

Challenging Childhood Dental Caries and Its Inequalities in Asian Countries

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The epidemic of childhood dental caries is an important public health problem in many Asian countries. Although caries level has decreased in Japan, it is still the most prevalent disease in school-age children. Despite the decrease, there are social inequalities in caries level in Japan. Caries inequalities also exist between various countries. When exploring the reason for increase/decrease and the inequality of caries level, it is necessary to focus not only on the direct causes, such as sugar consumption, tooth brushing, presence of plaque, and fluoride use, but also on the root causes of these direct causes. Various social factors that affect the behavior, health care access, and health of the population are known as social determinants of health, and these determinants are the major causes of health inequalities. This concept has drawn increased attention in the dental field. To reduce oral health inequalities, the International Association for Dental Research Global Oral Health Inequalities Research Agenda (IADR-GOHIRA[®]) has been launched. Considering social determinants is necessary for effective interventions. For caries prevention, building an environment that it is easy to access prevention regardless of family and community social circumstances is necessary. Regulation of smoking and improving the availability of sugar-free products including medications would facilitate healthier choices. Water fluoridation in several Asian countries, schoolbased daily fluoride toothbrushing program in the Philippines, and school-based daily fluoride mouth-rinse program in Japan are also good examples of public health intervention. Research and health policies should pay more attention to social determinants in order to reduce dental caries and its inequalities in Asian countries.

Joint Symposium 1

Tobacco Intervention Program for Schoolchildren in Malaysia—An Oral Health Initiative—

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Tobacco (smoking) is recognized as one of the major risk factors for non-communicable diseases and the single most important risk factor for oral cancer. As the 21st most common cancer in Malaysia, oral cancer deaths in Malaysia reached 1,587 or 1.55% of total deaths. (WHO 2011)

The Global Youth Tobacco Survey (GYTS) 2009 showed prevalence of current smokers of tobacco among students aged 13-15 years was 18.2%, while Global Adults Tobacco Survey (GATS) 2011 found that 23.1% of Malaysian adults aged 15 years and above were current smokers. The National Health and Morbidity Survey: *Malaysia Global School-Based Student Health Survey 2012*, reported the prevalence of current smokers in Malaysia among students aged 13-17 increased from 8.7% in 2010 to 11.5% in 2012.

Malaysia as a country member of the WHO Framework Convention on Tobacco Control (FCTC), drafted a National Tobacco Control Strategic Plan 2015-2019, whereby among its mission is to create Malaysia Smoking Free Generation 2045. The clear link between oral diseases and tobacco use provides an ideal opportunity for oral health personnel as front liners, to partake in tobacco control initiatives.

As school-based interventions have been the cornerstone of efforts to prevent health-compromising behaviours by young people, it is thus ideal to integrate tobacco control initiatives into the existing School Dental Programme. Through this initiative, every student is screened for participation in the intervention programme and are reinforced with non-smoking messages. This intervention programme could contribute to a smoke-free generation among Malaysians.

In conclusion, Oral Health Services Ministry of Health Malaysia play an important role in influencing students who smoke - to stop smoking and who do not smoke - not start to smoking.

Joint Symposium 1

Non-smoking Counseling and Dental Care Insurance Introduced in Korea

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Smoking already was defined as a disease by the WHO. Because of the disease, smokers must undergo counseling and treatment of specialists. Based on this point of view, I believe that dentists take the most appropriate professional counseling and treatment in smokers. The oral is the first organ which contacts the smoke in the body. Dentists can easily judge the patient's smoking status and the amount through a dental examination. Smoking is an obstacle to one's oral health. Many patients are already aware of the harmness of smoking.

People especially recognize the bad influence on the result of extractions such as periodontal treatments and dental implants. Thus, they can prevent systemic side effects and diseases by the education of anti-smoking from the entrance stages. A dentist is considered as the health care manpower who could make a difference on anti-smoking effect.

In conclusion, dentists with hygienists are responsible for improving the anti-smoking success rate for national health.

These are the 7 listed conclusions of this matter:

1. Oral soft and hard tissue changes by smoking
2. Periodontitis by smoking
3. An adverse effects of oral disease treatment by smoking
4. Social and economic expenses by smoking
5. Dentists role as non-smoking therapist
6. The brief composition of 5A and 5R- behavior transformation counseling skill
7. Dental insurance for smoking cessation counseling in Korea

Joint Symposium 1

Integrating Tobacco Interventions into Oral Health Program—Pilot Implementation of the WHO Brief Tobacco Intervention Program—

Takashi Hanioka

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It has been recognized that oral health care providers are in the unique position in helping smokers in the countries of North America and Western Europe, and yet oral health professionals have not fully embraced opportunities for tobacco interventions.

We conducted intervention studies and nationwide survey to confirm effectiveness/efficacy and reach elements, respectively, of smoking cessation interventions in dental settings in Japan. Then, we reviewed literatures regarding tobacco use interventions by dentists and dental hygienists and undergraduate education on the tobacco use interventions for dental and dental hygiene students.

We conducted survey of dental and dental hygiene schools in Japan regarding attitude toward the education and their circumstances to confirm requirement of optimization of clinical education on the tobacco use interventions and to make full use of the unique opportunity of providing dental interventions against tobacco use in Japan.

Fortunately, we have an opportunity of pilot implementation of the WHO brief tobacco intervention program into oral health care system. The program has a promise of the dental education and interventions against tobacco use in Asian countries as the common risk factor approach to NCDs.

Joint Symposium 2

Community Water Fluoridation—Why We Continue to Support it—

Mike Morgan

Melbourne Dental School, The University of Melbourne

As individuals we should take positions on issues that we feel passionate about. However the reasons for our viewpoints are often complex and informed by a multitude of factors. If asked to explain why it is we have the views that we have, we sometimes would have trouble explaining them with a rationale that stands up to scrutiny. However where there is evidence, based on work undertaken over many years (even when the evidence does have limitations), our reasons to make decisions are easier to explain. So it is with Community Water Fluoridation (CWF). We have decades of evidence on the effectiveness, safety and cost-efficiencies of CWF which a “reasonable” person (and particularly a scientist) would consider non contestable. While for the most part the studies from which the CWF evidence is drawn are of high calibre and the conclusions drawn from them are irrefutable, science is rarely if ever, perfect. We accept that sometimes the evidence arises from studies which are not, from a scientific perspective, as meticulous as they should or could be. We report on the health of humans through extrapolation and inference because it just isn’t possible to replicate the natural world through experimentation. Despite these shortcomings, the evidence identifying the benefits of CWF leading to policies that encourage and maintain this public health activity continues to be relevant to the world today. The affirmative position that society takes on supporting water fluoridation is one that sits well with the scientific and broader community.

Joint Symposium 2

Arresting Early Childhood Caries with Silver Diamine Fluoride

Chu, Chun-Hung

Faculty of Dentistry, The University of Hong Kong

Early childhood caries in children is still a global issue affecting many children. Surveys found most of the early childhood caries were left untreated, and caries would progress causing not only pain but systemic infection. While traditional dental care is not always unavailable and unaffordable, particularly in disadvantaged communities, the use of silver diamine fluoride (SDF) has been drawing increasing attention. SDF is a fluoride solution which has been used in some countries in Asia, including Japan and China, as a caries-arresting agent. It was recently cleared by the Food and Drug Administration in the United States as an off-label medicament. Topical application of SDF is a noninvasive procedure that is quick and simple to use. However, it stains caries black and this disadvantage must be discussed with patients or parents of their children before treatment. Clinical trials demonstrated that 38% SDF is more effective than 5% sodium fluoride varnish to halt the caries process. A review concluded that SDF is an effective, efficient and equitable caries control agent that may meet the criteria of both the United States Institute of Medicine and the World Health Organisation Millennium Development Goals for 21st century medical care. This presentation aims to provide an overview of the clinical use of SDF in management of early childhood caries in children.

Joint Symposium 2

Seal Taipei City Project, 2014-15

Yao-Hui Huang

Taipei Medical University

A collaborative oral health promoting project between Health Department of Taipei City Government and Taipei City Dental Association had been started since Sep., 2013. All the grade one students of primary schools in Taipei City received free pit and fissure sealant service on fully erupted permanent first molars by trained dentists at their dental offices. Around twelve thousand permanent first molars were sealed in 2013. In order to evaluate the effectiveness of this project, 1,832 participants were selected from stratified cluster random sampling and checked by pre-calibrated dentists in 2015. A structural questionnaire about oral health knowledge and behavior was filled by each recruited student. The rate of fully erupted permanent first molars were 79-90%, upper molars were higher than lower molars. The average complete retention rate of sealant at four permanent first molars was 57% (range: 60.4-55.3%). There was no statistic significant difference between sealant retention status and living districts as well as oral health knowledge and behaviors. Project evaluation is one of the crucial processes while developing an oral health promoting strategy. From the results of this project evaluation, we are able to adjust the project details in order to refine on this not-so-satisfied retention rate and to effectively monitor the service quality in the future. The most important role of this project is its locomotive effect impelling in Taiwan. All the grade one students and disadvantaged groups of primary schools are provided with free sealant program one year after the implementation of "Seal Taipei City Project".

Joint Symposium 2

Individual Oral Health Education and Diet Control Program by Use of the Computer Program

Shin, Seung-Chul

Department of Preventive Dentistry, Dankook University, Korea

It has been well known that individual oral health education method and diet control program would be better and more effect to change the knowledge, attitude and habits than group education for dental patients as well as for subjects, in consideration of the different age, gender the characteristics, habits and the oral health states. In recent years, the computer program to estimate the individual oral health level has been developed and used at the dental clinic for establishing the prevention based incremental dental health care system, so we call as recall system, calculating with such factors as the numbers and the state of residual natural teeth, caries state, periodontal state, the other oral states and oral health habits or systemic conditions, with the different weight for each factor. This individual oral health index can be used in the field for choosing the proper contents and amounts as the time and the frequency, for the oral health education for individual patient.

Moreover, computer program on the diet control for caries prevention has been devised by calculating automatically, such items as energy Kcal, intake rate for carbohydrate, protein and fat, intake of Na amounts, frequency of intake the detergent food and the potential index for caries environment in daily diet, estimated through the experiments for measuring the sugar contents and the viscosity of about 300 foods which were the favorite for peoples. It will be suggested for appropriate diet program after alerting ones unbalanced diet habits in daily problems for individual.

These two computer programs would be available for clinical preventive dentistry and introduced to use.

Joint Symposium 3

From Inter-professional Education to Inter-professional Collaboration: UI Experience

Melissa Adiatman

Public Relations and International Affairs, Faculty of Dentistry, Universitas Indonesia

Inter-professional Education (IPE) needs to be implemented in health professions education. Many research has proven its benefits. Evidence-based practices of IPE are available in various studies. Globally, there are various application of IPE in the dental education system. Effective IPE will result in effective Inter-professional team, and eventually will lead to effective Inter-professional Care and increase patient safety.

The reasons for implementing IPE are; the demographic changes, aging population, chronic health conditions needing complex care, increasing patient safety, work pressure and gaps, and many more. Due to these reasons, Universitas Indonesia implemented the IPE for undergraduate students from 5 health care sciences: Faculty of Medicine, Dentistry, Nursing, Pharmacy, and Public Health. Together, representatives implemented IPE through Teamwork and Collaboration of Health Care Team Module. The implementation started in 2013. The objective was to increase the ability of the students to collaborate within healthcare team.

In 2015, following the implementation of IPE, we continue to develop the module to Inter-professional Collaborative Practice. The 5th and 6th year students of Health Care Sciences join together once a week in a session to collaborate in a project together in one of the following three settings: clinical settings, family home care, and community settings. By the end of the module the students have the experience to work together with different health professionals in the same clinical case or project. We hope, through the development of IPE, the quality of care by future health professionals will be increased.

Joint Symposium 3

Education in Community Dentistry: a Case Study from Thailand

Waranuch Pitiphat

Faculty of Dentistry, Khon Kaen University

This presentation describes community dentistry education in Thailand using a case study from Khon Kaen University (KKU). KKU is situated in the northeast—the poorest region of Thailand where the dentist: population ratio is smallest (1:11,821 in 2015). Community dentistry and outreach have thus been the cornerstone of KKU Faculty of Dentistry since its inception. Our Doctor of Dental Surgery (DDS) curriculum includes 20 credits of community dentistry, with equal distribution of lectures and practices, out of 234 required credits. Students begin their first year of learning through lectures and community visits, and then through delivering oral health education and preventive care to the nearby communities during their 2nd and 3rd years.

A highlight is the 10-day “Integrated Health Science Community Field Work”, in which students from faculties of Dentistry, Medicine, Veterinary, Nursing, Associated Medical Science and Pharmacy, join force to work as a health team in rural villages. This not only helps our 3rd-year students to experience inter-professional collaborative practices, but also to understand community lifestyles and health disparities. Our 5th year students work in groups in school-based programs to implement year-round oral health activities at nearby schools. Finally, sixth-year students are trained in community hospitals for 5 weeks to conduct oral health projects in various target groups under supervision of public health dentists. It is hoped that our curriculum could help cultivate next generation of dentists who are well-equipped with essential skills for public health dentistry as well as being socially aware and committed to community engagement.

Joint Symposium 3

Community Based Student Projects in Preventive Dentistry in China

Shuguo Zheng

Department of Preventive Dentistry, Peking University School of Stomatology

Non-communicable diseases (NCDs) affect all age groups, especially the elderly people. The prevention of NCDs is of great significance to improve quality of life and reduce disease burden in individuals and countries. Controlling the common risk factors that shared by NCDs and oral diseases is essential for the prevention of oral diseases and NCDs. In China, the first line of defense against NCDs is the Community Health Service, which is the foundation of the health system. NCDs Comprehensive Prevention and Control Model have been established in community health service centers. Therefore, community based student practice is particularly necessary, which is an important part of the teaching and personnel training for preventive dentistry. The Peking University School of Stomatology started the exploration of community based student practice 20 years ago, integrating the teaching objectives and content into the basic functional service of the Community Health Centers. The University established a rural and urban teaching base with Miyun Dental Prevention Institute and Xinjiekou Community Health Center respectively, on which the student projects are carried out each year. Oral examinations and lectures about oral health knowledge were provided for the community residences by dental students under supervision. In order to deliver accurate and targeted lecture, information about the oral health knowledge and behavior of residences were collected through focus groups before the lectures. Through the community based practice, students were able to understand the feature and working mechanism of the Community Health Service in controlling common risk factors and NCDs Prevention.

Joint Symposium 3

Quality Assurance System in Japanese Dental Education

Ikuko Morio

Dental Education Development, Graduate School of Medical and Dental Sciences Tokyo Medical and Dental University (TMDU)

In 2001, the Japanese dental education model core curriculum was conceived, and since then its revision has been led by the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) every five years. The model core curriculum served as the common denominator for the undergraduate dental education at the 29 dental schools in Japan. There is also the Common Achievement Test (CAT) in place for evaluating dental student's knowledge, skills and attitude before treating live patients. The contents of CAT are based on the above-mentioned model core curriculum.

Against this backdrop, dental schools in Japan have implemented a series of curriculum reforms in the past 15 years. Some of the keywords in this endeavor are integration of basic and clinical subjects, outcome-based teaching/learning, inter-professional approach, and competencies for treating the aged and/or medically compromised patients.

One of the major challenges Japanese dental education faces is a need for establishing a new dental accreditation system. An accreditation system based on a self-study report and a site visit by external evaluators has become a norm in the world. Under the aegis of MEXT, a working group for the Research on the Establishment of Dental Accreditation System in Japan started its activities in 2012. In Japan, organization-based evaluations for higher education are well embedded, while subject-based evaluations in the fields of medicine and dentistry are still in the process of formation.

In this presentation, the new dental accreditation system in Japan will be introduced and some challenges we need to address will be discussed with a focus on community dentistry.

Education Seminar

Deciduous Tooth is Parent of Permanent Tooth

Mizuho Nishino

Tokushima University

Permanent tooth germ from a central incisor to a second premolar grows up from a deciduous central incisor to a second deciduous molar. Then a deciduous tooth is able to call a parent of permanent tooth.

And if a permanent tooth erupts in the mouth which have a caries in primary dentition, the permanent tooth become caries easily. Because the dental caries is an infectious disease and a permanent tooth just after eruption is not yet completed post-eruptive maturation (full calcification).

Furthermore if there are many cavities in primary dentition, permanent dentition and occlusion will be affected.

Therefore the most important thing is caries prevention of deciduous tooth and if a caries occur in a deciduous tooth, effective caries arrestment is extremely important.

Silver diamine fluoride (Saforide[®]) is very effective for arresting caries treatment. Nowadays Saforide[®] is used in a lot of countries in the world. However, unfortunately, at a certain place silver diamine fluoride is not effective. Why? And at a certain place a dentist uses Saforide[®] by wrong way.

In this presentation "Deciduous Tooth Caries Free Society Campaign" and "Silver Diamine Fluoride and its proper application" are adopted.

Keynote Speech

Strategies for Oral Disease Prevention and Health Promotion—WHO Perspectives—

Hiroshi Ogawa
World Health Organization (WHO)

In order to facilitate this paradigm shift of developing oral health strategies under the Noncommunicable Diseases (NCDs) umbrella, WHO Oral Health Programme has re-enforced to take integrated approaches to disease prevention and health promotion which include tackling poverty, inequality, tobacco and alcohol. A focus on oral health in overall primary health care will not only help improve oral health itself, but will also reduce the rate of cardiovascular diseases, cancer, chronic respiratory diseases and diabetes. It is acknowledged that a common risk factor approach is the most effective way to tackle oral health issues within the larger fight against NCDs, rather than trying to address oral health on its own.

Opportunities to prevent and control NCDs occur at multiple stages of life; interventions in early life often offer the best chance for primary prevention. Policies, plans and services for the prevention and control of NCDs need to take account of health and social needs at all stages of the life course, starting with maternal health, health promotion for children, adolescents and youth followed by promotion of a healthy working life, healthy ageing and care for people with NCDs in later life.

Furthermore, inclusion of oral health professionals in health promotion, prevention, early diagnosis and control of NCDs should also be encouraged. Oral health professionals are urged to strengthen or develop multisectoral policies and plans to set the targets to control NCDs as well as oral diseases.

Keynote Speech

Leading the World to Optimal Oral Health

Tin Chun Wong
FDI World Dental Federation President 2013-2015

In recognising the enormous burden of oral diseases with unequal accessibility of care and changing disease patterns, FDI faced the task of identifying these challenges with Vision 2020. The vision outlines the principles of oral healthcare and the aims of the future of dental medicine. It also emphasizes five important elements in our profession: combating the demand, role expansion, education, economics and research.

Our profession must be constant in enforcing a strategic role with the aim to put oral health on the political agenda as oral diseases affect 90% of the world's population. Oral diseases also share common risk-factors with the four chronic diseases identified by the United Nations as noncommunicable diseases: cancer, cardiovascular and respiratory disease and diabetes. After much political lobbying, a significant declaration was adopted at the UN High Level Meeting on Noncommunicable Diseases in 2011 with the inclusion of Oral Diseases.

Dental treatment has been cited by the WHO as the fourth most expensive medical treatment, prevention is widely identified as the single most important means to combat oral diseases. The dental profession has the knowledge, the science and the data to drive an advocacy strategy. This strategy must be aimed at global, national, professional associations and institutional levels to reach our goals.

Keynote Speech

Reconsideration of Molecular Target Therapy against Dental Caries and Periodontal Disease

Yoshimitsu Abiko

Nihon University, School of Dentistry at Matsudo, Department of Biochemistry and Molecular Biology

It is important to develop the preventive dentistry against oral infectious diseases based on the theory through the molecular target therapy with the novel therapeutic strategies. To develop molecular target therapy against dental caries and periodontal disease, production of safer vaccine, recombinant antibodies for passive immunotherapy, and replacement therapy are introduced.

Gene encoding *S. mutans* glucosyltransferase (GTF) and surface protein antigen (SAI/II), *P. gingivalis* outer membrane protein (OMP) and hemagglutinin (HAG) were molecularly cloned and functionally expressed in *E. coli*. Recombinant proteins were immunized to mice and produced hybridoma and constructed monoclonal antibodies (mAbs) inhibiting virulent activities. Gene encoding single-chain variable fragment (ScFv) was molecularly cloned from the hybridoma IgG gene and functionally expressed in *E. coli* or *B. brevis* host cells. Human type mAbs were also constructed using transgenic mice carrying human immunoglobulin gene loci. Cyclodextran, inhibitor of GTF, synthase gene in *B. circulans* was expressed in oral bacterium *S. gordonii* by resident plasmid integration transformation system.

ScFv against GTF and SAI/II were capable of inhibiting the insoluble glucan synthesis and reduced colonization, respectively. ScFv against OMP and HAG inhibited coaggregation and hemagglutinating activities. The gene producing cyclodextran synthase was successfully expressed and the enzyme was secreted from *S. gordonii* cell. Thus, safer recombinant vaccines for dental caries and periodontal disease can be produced in large quantities. ScFv and human type antibody neutralizing virulent activity will be useful in the development of passive immunotherapy. The novel recombinant *S. gordonii* strain might be useful for replacement therapy through production of cyclodextran in dental plaque.

Special Lecture

Oral-systemic Health Linkage and Oral Health Strategy in Aged Society

Hideo Miyazaki

Division of Preventive Dentistry, Graduate School of Medical and Dental Sciences, Niigata University

Japan has experienced rapid changes toward a super-aged society. We had to reconstruct our social health system in order to adjust to an aged society during the last 2 decades. Cancer, heart disease and cerebrovascular disease are the three major causes of death in Japan. To strengthen the extension of Japanese life expectancy, mortality from these non-communicable diseases (NCDs) must be prevented. Modifiable risk factors for NCDs are key issues in terms of effective approach in order to ensure a long-term increase in population health.

Major oral diseases such as dental caries and periodontal diseases are also categorized within NCDs. At the same time, scientific reports have suggested that oral health condition is one of the key risk factors for systemic diseases including NCDs. Especially, it is now well-known that periodontal disease is associated with systemic diseases such as cardiovascular disease, diabetes, and so on. However, integration on the other oral-systemic relationship is still unclear. Bone metabolism may be one of the keys combining among oral diseases including periodontal disease and tooth loss, kidney disease, and osteopenia/osteoporosis leading to bedridden through bone fracture. Physical disability causes falls and fracture. If oral diseases may cause directly or indirectly mental impairments such as cognitive impairment or depression, oral health promotion must have a great social impact. At which phases to approaching locomotive syndrome or sarcopenia, suggested in terminal stage for life, can oral health relating personnel or general practitioners contribute to prevent them?

<http://www.dent.niigata-u.ac.jp/prevent/english/niigata_study.html>

Academic societies have an important role to produce scientific evidences and provide them to the decision makers on health policy and/or strategy.

Oral presentation abstracts

AO-1 How social determinants affecting dental caries at rural and urban areas

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【Objectives】 The prevalence of dental caries in children has increased epidemiologically. Dental caries is caused by multifactorial include the social determinants of health which are age, gender, tooth brushing behavior, oral hygiene status, access of health services, economic status, and nutritional status. The objective of this study was to determine the relation between social determinants of health with dental caries in preschool and school aged children, both from rural and urban areas, in Cimahi City, West Java, Indonesia.

【Methods】 This Research method used cross-sectional study with simple random sampling. Data were collected through several types of questionnaires are, food frequency questionnaire, which is used to gain datas of nutritional status measurement, def index and DMF index through clinical oral examination. Oral hygiene status measurement using OHI-S. Statistical analysis used the chi square test, Mann Whitney, and logistic regression.

【Results】 Results of this study on 225 children in preschool and school at rural and urban areas showed that the prevalence of dental caries was 84.9%. There was a significant relationship between economic status, utilization, access to health services, attitudes and practice in oral health, oral hygiene status, and carbohydrate intake with dental caries ($p < 0.001$). There was no relationship between age, sex, and body mass index with dental caries ($p > 0.05$). The regression coefficient between economic status, toothbrush practice, and carbohydrate intake with dental caries was highly significant ($p < 0.001$) (OR: 14.437; 95% CI: 4.328-48.160).

【Conclusions】 The conclusions of this study is there is a very significant association between economic status, utilization and access to health services, attitudes and practice in oral health, oral hygiene status, carbohydrate intake with dental caries in preschool and school children. Based on this study, it should to improve the oral health promotion and prevention programs in children.

【Keywords】 social determinants, dental caries

AO-2 Confidence in discussing oral cancer-associated behaviours among Australian Oral-Health Professionals

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【Objectives】 To evaluate the level of confidence among Oral Health Professionals (OHPs - dentists, dental hygienists, dental therapists, and oral health therapists), practising in Victoria, in discussing oral cancer-associated behaviours with patients.

【Methods】 A 37-item survey was distributed to 3,343 OHPs. Items included socio-demographic and work-related characteristics and self-assessed oral cancer knowledge. The OHPs level of confidence discussing health behaviours with patients was assessed utilizing a 10-point scale ('0': not at all confident to '10': highly confident). Behaviours included: tobacco use, alcohol consumption, sexual practices (i.e., oral sex), oral hygiene practices, diet and nutrition. Level of confidence scores were computed by adding the responses to these five behaviours.

【Results】 A total of 375 OHPs responded via paper or web-based questionnaire. Response rate 9.4% (range: 9.3%-22.3%). Participants generally felt confident discussing oral hygiene practices (Mean 8.9; s.d. 1.6), diet and nutrition (Mean 8.3; s.d. 1.7), tobacco use (Mean 8.2; s.d. 1.8), and to a lesser extent, alcohol consumption (Mean 7.3; s.d. 2.2). In contrast, the mean level confidence for discussing sexual practices was 3.7 (s.d. 1.8). In a multivariate analysis the confidence score was associated with dental specialist status, OHPs' knowledge of oral cancer risk factors and the number of years in practice [$F(3,321)=7.97$; $p < 0.0001$]. The results indicated a positive association with knowledge of oral cancer risk factors and being a dental specialist, and a negative association with the number of years in practice. These three independent variables accounted for 6% of the variance in confidence score.

【Conclusion】 OHPs were confident providing their patients with advice on oral hygiene and diet. However, they were less confident discussing more sensitive topics including sex practices and alcohol consumption. Further training of OHPs in counselling patients on oral cancer-associated behaviours would be an important step towards improving prevention and early detection of oral cancers.

【Keywords】 oral cancer, self-confidence, oral health professionals

AO-3 An Indonesian version of the Health Literacy Dental Scale (HeLD): Cross adaptation, assessing validity and reliability

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【Objective】 The aim of this study was to develop an Indonesian version of the Health Literacy in Dentistry (HeLD) instrument and to analyze its validity and reliability among 12-14 years old in Jakarta.

【Methods】 HeLD questionnaire was forward-backward translated into Indonesian. This study design is *cross sectional* with correlative and comparative analysis. The questions of the HeLD scale were used to assess the components of oral health literacy. The test and retest reliability, internal consistency, convergent and discriminant validity of HeLD were also evaluated.

【Results】 462 students completed the self-administered questionnaire. The mean total HeLD score was 3.45 ± 0.02 . The Intra-class Correlation Coefficients (ICCs) were 0.75 and Cronbach's alpha=0.77. The convergent and discriminant validity were confirmed by HeLD scores being significantly associated with last dental visit ($p < 0.001$).

【Conclusions】 The Indonesian version of HeLD-14 suggested that is a valid and reliable instrument for measuring oral health literacy in children ages 12-14 years old.

【Keywords】 oral health literacy, Health Literacy in Dentistry Scale (HeLD), validity, reliability, children

AO-4 Oral health behaviour change with individual approach among 12 years

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【Objectives】 In Indonesia, the prevalence of periodontal disease was 96.58%, while the prevalence of dental caries, especially in children with a 90% prevalence of active caries experience amounted to 72.1%. Based on data obtained at the health center Cimahi In 2014, diseases of the pulp and periapical tissue was ranked third out of 45 the list of diseases. Meanwhile, the prevalence of caries in children up to 100%. Age 12 is an indicator used by WHO, that is because the whole incisors to the molar one has grown completely. Hence, the need for efforts to prevent oral disease early.

【Methods】 This Research method used cross-sectional study with simple random sampling. Data were collected through questionnaires for knowledge and attitude, observation form on brushing teeth for act, and clinical oral examination using PHP index. Statistical analysis Wilcoxon Signed Ranks test.

【Results】 Results of this study on 100 children that divided into to group rural and urban showed that there are a significantly differences in knowledge and attitude ($p < 0.001$) before and after chair side talk session in rural and urban group. A highly significant differences in act for tooth brushing in both group before and after chair side session ($p < 0.001$).

【Keywords】 dental education, chair side talk

AO-5 Planning oral health preventive program by using sociodental risks groups approach

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【Objectives】 Given the high prevalence of dental caries in children in Yogyakarta Province, Indonesia, proposing strategy for improving oral health status should be initiated. Hence, the aim of this study is to explore the use of a modification of the sociodental approach for planning oral health preventive program.

【Methods】 The sociodental risk groups (SRGs) approach is a modification from the original socio dental approach for needs assessment. Eight SRGs can be identified with different dental needs and also risk of developing or progressing caries based on the combination of untreated caries (DT from DMFT), the oral impact related to caries (measured by condition specific child -OIDP) and oral health behaviour. Data from a cross-sectional survey of 1,906 children aged 12 years in the province of Yogyakarta were used.

【Results】 SRG assessment showed that 257 children (13.5%) had a low risk of caries and need simple intervention mode; 874 children (45.8%) had a moderate risk and need moderate intervention mode; 775 children (40.7%) had a high risk and need an extensive intervention mode. Standard (curative) treatment is needed in only 5% of the children with untreated caries.

【Conclusions】 The SRG approach is useful to differentiate children. Proposal for intervention need further test to look at its effectiveness.

【Keywords】 sociodental risk groups, preventive program

AO-6 Prevalence and severity of Early Childhood Caries (ECC) in 6- to 24-month-old children in DKI Jakarta

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【Background】 Early Childhood Caries (ECC) is an important health problem in Indonesia. Its prevalence and severity in children under three years old tend to increase. According to theory, time is a factor in caries formation; thus it will be too late if prevention only starts at the age of three. Given the importance of primary teeth in child development, ECC prevention should have been conducted earlier at the onset of deciduous teeth eruption. Once primary teeth enter the oral cavity environment, they will immediately be exposed to caries risk factors.

【Objective】 To study the prevalence and severity of ECC in 6- to-24-month-old children in DKI Jakarta.

【Methods】 Cross-sectional study of 424 children aged 6 to 24 months, using two-stage cluster random sampling. Data collection using questionnaire to obtain children characteristics and intra-oral visual examination to acquire def-t scores.

【Result】 ECC prevalence in 6- to 24-month-old children was 36.8%, with def-t score 1.52. ECC was already found in 4.9% of children aged 6 to 12 months. The proportion of children with ECC in the 13- to 18-month-old group was 29.3% with def-t score 1.03, while in the 19- to 24-month-old group it was 65.2% with def-t score 2.92. There was a significant relationship between age group and ECC occurrence ($p < 0.05$). Conclusion: The progressive increase of caries prevalence and severity in children under 24 months implicates the need of earlier prevention. It will be too late if preventive action is only taken once primary teeth have fully erupted.

【Keywords】 ECC, age, prevalence, severity

AO-7 Curriculum development of improving comprehensive administration of patients with high risk of caries

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【Objective】 To improve comprehensive administration of patients with high risk of caries in clinical training for students, and evaluate the effect of curriculum development.

【Material and Methods】 Baseline investigation was performed to evaluate the attitude and demand of the students for comprehensive administration of patients with high risk of caries. Caries risk assessment forms were used in clinical training for eight-year students in Peking University School of Stomatology. The process of the curriculum included five steps, evaluation the risk of caries, sign consent form, collection the data of 1st visit, comprehensive administration, evaluation of the comprehensive administration. Evaluation investigation of the curriculum was performed after one year.

【Results】 Accuracy rate of the knowledge about comprehensive administration of patients with high risk of caries increased from 55.3% to 71.3% with statistical difference ($P=0.018$). Before training, 47.4% students never heard of Caries Management Pathway (CMP), while after training 100% students understood and 60% had begun to use CMP. All students (100%) considered that they need the training of CMP, and 95.3% students were satisfied with the training. The evaluation of the content, methods and effect of the training by students were all positive, and the rate of "good" or "very good" assessment varied from 89.3% to 100.00%.

【Conclusion】 The curriculum development of improving comprehensive administration of patients with high risk of caries was successful, and worth to be popularized.

AO-8 The effectiveness of the SDF in inhibiting caries activity on primary teeth of kindergarten students in Banjar regency

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【Background】 Caries prevalence on children in South Kalimantan is a public health problem which is very high and rarely treated. Therefore, it is necessary to care of early childhood caries. The Silver Diamine Fluoride (SDF) is one of choice to inhibiting caries activity in primary teeth.

【Objective】 This study aimed to analyze the effectiveness of the SDF in inhibiting caries activity on primary teeth in Banjar regency kindergarten students on 2014.

【Method】 Case control study, 12,080 tooth surfaces from 151 children age 5-6 years old were applicated SDF and gave a dental health education, while 77 respondent including to parents and teacher were measured on dental health behavior used questionnaires.

【Results】 after 6 months evaluation, shows that 85.9% dental caries surfaces was significantly arrested ($p<0.05$), there was significantly correlation between parent and teacher oral health behavior towards children oral health.

【Conclusion】 SDF is effective in inhibiting dentine caries activity on primary teeth, and there was significantly correlation between parent and teacher oral health behavior towards children oral health.

【Keywords】 early childhood caries, oral health education, arrested caries, silver diamine fluoride

AO-9 Oral health improvement approach to the children under 60 month through tailored message

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【Background】 Health risk appraisal (HRA) is probably the most widely used health education tool for promoting individual behavior change, such as health promoting to the community by care givers in Posyandu use tailored message in which describe about dental biofilms as an etiology of dental caries diseases, to remove dental biofilms doing by appropriate method and in regularly toothbrush.

【Objective】 To evaluate the effectiveness of oral health promotion intervention using oral health evaluation card called KMGS to increase oral health children age 24-60 month in Posyandu.

【Method】 The design study was quasi experimental with purposive sampling, the total respondents of 54 pairs mother and her child age 24-60 month old were clinically examined at the first month activities as baseline and re-examined at the next 3 month by calibrated 2 dentist and 10 dental students, the respondents were divided into 2 groups as control group was 23 pairs mother and her children, and intervention group was 31 pairs mother and children, in Tugu Depok. The oral health promotion in community was conducted by caregiver to the mother who has children aged 24-60 month old was visited Posyandu, the oral health promotion programme used KMGS was based on cognitive behavioural principles and the individual tailoring for each participant on the resistance of participants' thoughts about oral health status. The effect of the programmes on oral hygiene (plaque score, and maturity of plaque score), all respondents was evaluated in the second of month and the third of months after oral health promotion, Statistical analysis involved comparison of mean values, Anova test and Pearson correlation.

【Result】 The changes of maturity plaque in the last study was indicated that the score 0 of maturity plaque had increase significantly ($p < 0.05$), and also score oral health behavior (score > 51) of mother was increase significantly after 3 month intervention, and there was indicated significant correlation between oral hygiene of children and behavior of mother (Pearson's $R = 0.337$, $p < 0.05$).

【Conclusion】 The oral health promotion program in Posyandu by care giver used KMGS was efficacious in improving long-term adherence to oral hygiene, especially to decrease ECC risk factor as a dental plaque.

【Keywords】 children age 60 month, oral health, mother's behavior, KMGS pack card

AO-10 Efficacy of mouth rinse sormulation based on cetyl pyridinium chloride in the control of plaque as an early onset of dental calculus built up

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【Objectives】 This study aimed at comparing the anti-plaque and anti-gingivitis potential of a mouth rinse containing EO, zinc and fluoride with a CPC-containing mouth rinse over a short term period.

【Methods】 This study is a double blind randomized cross over clinical trial with a 3 days run in phase (wash out period). A non-brushing 3 days intervention was conducted with 18 females with mean age of 21 years old and a single examiner through put the study. Prophylaxis was done after each intervention. Four mouth rinse were tested with group 1 as negative control, group 2 as mouthwash with alcohol, group 3 as mouthwash with CPC 0.1%, group 4 as mouthwash with CPC 0.07%. Bacterial load was assessed using Cariscreen.

【Results】 The result shows that the most effective to the less effective mouth rinse in inhibiting bacterial built up (antiplaque) are mouthwash 2, 3, 4 and 1 respectively, but with no statistically significant effect in anti-gingivitis.

【Keywords】 mouth rinse, cetyl pyridinium chloride, in vivo

AO-11 The development of instructional media by an audio dentoform of tooth brushing technique

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【Objectives】 This study is developed and evaluated the instructional media for the visual impairment people.

【Methods】 The instructional media is developed from dental hygiene dentoform model and combine Thai-Braille text with audio. This model innovation and user's manual are examined content validity by three specialists. The reliability of media performances are evaluated by questionnaire and interviewing the blindness and their caregivers.

【Results】 The participants are 34 of visual impairments persons (58.8% of male) and 30 of their caregivers (83.9% of female). Results show that most of subjects satisfy the performance, design, and usability of the instructional media. The tooth brushing instructions are clear, but the audio volume speaks in the soft voice. In addition, the participants can understand and follow the user's manual and simple tooth brushing instructions.

【Conclusion】 The audio dentoform with tooth brushing instructions are user-friendly for visually impaired persons and caregivers. This dental simulation model is useful to improve oral health self-care practice of people with vision loss and Braille-users. For further study, this instructional media and user's manual should improve knowledge of oral hygiene care and support special educational needs.

【Keywords】 visual impairment people, tooth brushing instructions, oral health self-care practice

AO-12 Comprehensive prevention for oral disease of children in China

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In recent years, Chinese government achieves a lot in children's oral health. From 2008, the central government invests yearly in national oral health comprehensive intervention program for children in China. The purpose is to promote the oral health for children in the central and western regions, together with the east region from 2014. The aims of this program are also to explore and develop a work model on oral disease control, to improve the level of oral health knowledge and oral health status of children, and to develop oral health service capability in the region. It is one of the important parts of medical and health care system reform and is also the first nationwide public program on oral health supported by government. The program involves oral health education, training of dental workforces, oral health examination, use of sealant and topical fluoride application. School children at 7-9 years old and kindergarten children at 3-6 years old are main target age groups. For the past 7 years, the central government invested more than 200 million on 700 counties of 31 provinces. Nearly 140 million children, together with their parents and teachers, received oral health education by this program. About 72 thousands licensed dentists, nurses and other professionals from 8 thousands hospitals were trained. 8,240 thousands children accepted oral health exam and 3,900 thousands of them accepted pits and fissure sealant, 1,800 thousands of them accepted topical fluoride application. At present, we are designing and began to systematically evaluate the project, in order to understand the project implementation effect. However, Chinese government is still facing the challenges on oral disease prevention and control, as shortage of dental professionals, lack of oral health knowledge, etc.

AO-13 Factors associated with oral health status in Vietnamese schoolchildren

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【Objective】 The aim of this study was to assess the association of self-reported oral health, dental habit and obesity with dental caries and gingivitis in 10 year old Vietnamese schoolchildren.

【Methods】 Subjects were 1,079 10 year-old children in Ho Chi Minh City, Vietnam who were randomly selected from 13 public schools by a multistage probability sampling strategy in 2015. The information on self-reported oral health and dental habit including self-checked gum/teeth, dental visit, tooth brushing frequencies were investigated by a questionnaire. Anthropometric index (height, weight) of children was measured and a record made of dental, periodontal status (DT, PII, GI). Body Mass Index (BMI) was calculated and nutritional classification of children by BMI-for-age percentile was conducted.

【Results】 Prevalence of dental caries and gingivitis were 25.3% and 100%, respectively. The percentage of children who were classified as underweight or normal were 10.7% or 52.6%, respectively. 229 children (21.2%) were overweight, and 167 (15.5%) were obese. The risk factors related to dental caries were school location (OR=7.8), self-reported dental caries (OR=1.4), dental visit frequency (OR=1.6), self-checked teeth frequency (OR=1.5), tooth brushing frequency (OR=2.2) and obesity (OR=2.3) ($p<0.05$). The risk factors related to gingivitis were self-reported gingivitis (OR=1.5), dental visit frequency (OR=1.3), self-checked gum frequency (OR=1.3), obesity (OR=6.1) and dental plaque (OR=1.7) ($p<0.05$).

【Conclusion】 There were high prevalences of dental caries and gingivitis, which were associated with oral and behavioral factors in 10 year old school children. The improvement of oral hygiene condition and appropriate oral health education with emphasis on oral self-checked behavior are important to improve oral health. This study also demonstrated the significant association between dental caries and gingivitis with obesity in school children. In future preventive programmes, the importance of obesity should not only be emphasized with respect to general diseases but also with regard to oral diseases.

【Keywords】 dental caries, gingivitis, obesity

AO-14 Association of dental fluorosis and caries at rural and urban areas

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【Objectives】 Dental fluorosis results in the hypomineralization of tooth enamel and weakens the enamel susceptibility to dental caries. If dental fluorosis associates with prevalence of dental caries, it would differ the method of dental caries prevention. This study was a preliminary study of dental caries prevention program of Public Health Department in Jenderal Achmad Yani University, Cimahi. The purpose of this study was to determine the correlation of dental fluorosis and caries in children aged 11-12 years in urban and rural area at Cimahi, and also to determine the differences of dental fluorosis prevalence between both area.

【Methods】 This Research method used cross-sectional study with cluster random sampling. 126 school children aged 11-12 years old were selected from rural and urban area. 52 children were from rural group and 74 children were from urban area. The children were assessed for dental fluorosis and DMFT index according to WHO basic survey method.

【Results】 This study revealed that there was a significant correlation between dental fluorosis and caries in rural ($p<0.001$) and urban ($p=0.001$) area. Number of children with dental fluorosis was higher at urban area and lower at rural area ($p=0.001$). This study also showed DMFT index in urban area is 3.52, which is also higher compare with DMFT index in rural (3.12).

【Conclusions】 Dental fluorosis associates with prevalence of dental caries and the moderate prevalence of dental caries was showed in both rural and urban areas in Cimahi, one of the large city in West Java Province, Indonesia. The differences of dental fluorosis prevalence will affect the methods of overall caries prevention.

【Keywords】 dental fluorosis, dental caries, DMFT index

AO-15 Oral health status for disabled persons in Korea

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【Objectives】 Oral health status for disabled persons as physical disability, mental weakness, visual and audial disability, mental handicap and affection autists, might be poor in consideration of hard control for them. But there were not so many data base for the oral health on the handicapped persons in Korea and have some difficulties to establish the proper oral health policy for them. So it needed to set more available data for oral health status in Korea, according to the classification of the disabilities by age group.

【Subject and Method】 About 2,000 peoples of handicapped person were examined with oral status by direct observation and by the image analysis of oral status for disabilities, in Korea.

【Results】 Caries experience and periodontal status or oral hygiene state were analyzed according to the age group and the classification of the disabilities.

【Conclusion】 The data of the survey will be a good base and the evidence for establishing the oral health policy of the disabilities in Korea.

AO-16 Psychosocial impact of dental aesthetics among patients attending USIM dental clinic

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【Objective】 The main purpose of this study was to evaluate the impact of dental aesthetics towards psychological and social behaviour using the “Psychosocial Impact of Dental Aesthetics Questionnaire” among patients attending USIM dental clinic.

【Methods】 The cross sectional study was done in Islamic Science University of Malaysia (USIM) whereby a modified “Psychosocial Impact of Dental Aesthetics Questionnaire” (PIDAQ) was distributed among new patients attended orthodontic dental clinic. A total of 50 patients (38 females and 12 males) were invited and consented for this study. From the questionnaire, four main domains were evaluated which consist of dental self confidence, social impact, psychological impact and aesthetics concern.

【Result】 According to this study, almost 53.3% responded of low level of dental self confidence, 23.7% were not sure while 23% responded of high level of dental self confidence. The study also shows 41.5% responded that dental aesthetic have less effect on their social life, 19.5% were not sure and 39% agreed with dental aesthetic have effect on social life. Furthermore, 26.3% responded that dental aesthetics have less impact on their psychological, 18.7% were not sure and 55% agree that dental aesthetics have impact on the psychological. Lastly, 36% responded of less dental aesthetic concern, 14% were not sure and while 50% have aesthetic concern on their dental appearance.

【Conclusion】 The study showed that dental aesthetics play a major role on patients’ self-confidence and could influence their social life. Apart from that, dental aesthetics also effect patients’ psychological, emotion and behaviour toward other people. Thus, a good dental aesthetics could help build up patient’s self esteem, improve social interaction and lead to happier daily life.

【Keywords】 dental aesthetics, orthodontics, psychosocial impact

AO-17 Better oral health better performance: A preventive dentistry for football players

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[Introduction] Football is one of the most popular sports in the world including Thailand where the professional football teams are currently developed and increasingly famous. The performance and training of the football players are the keys for their success. It was previously reported that football players have significant oral health problems including untreated caries, gingivitis or malocclusion. They also suffer from dental trauma resulting from the sport-related activities. Since oral health and overall health of an individual are linked to each other, poor oral health negatively affects individual well-being, training and performance. Therefore, dental professionals should be part of the health care team to take care of the oral health problems, promote oral health of the football players. As a result, good oral health may improve their performance and success of the team.

[Objectives] 1. To be a partnership with the football managers, players and physical therapists for setting up the oral health care program for the football players.

2. To prevent and promote oral health of the football players to enhance their performance.

[Methods] Thirty professional football players of the Phitsanulok Football Club were participated in this study. Oral health status were evaluated by means of DMFT, tooth wear index and orofacial injury experiences. Oral health issues were identified and prioritized. Preventive project were done by the focus group discussion of the smart team that included the football managers, dentists, physical therapists and dental students.

[Results] Approximately 60% of the players had tooth attrition and 16 % had history of head injury and dental trauma. All players showed signs of gingivitis and the average decay per person was 11.7 ± 2.5 teeth/person. Three preventive programs were established from the group discussion as follows:

1. Dental education: A guideline for the management of dental and jaw injuries were provided. This guideline includes the symptoms of dental and jaw injuries, initial examination, first aid and prevention. After being instructed, the average post-test scores (8.09) were statistically higher than that of post-test score (8.09, $p < 0.05$).

2. Reducing the trauma to jaws and muscles using mouth guard: Mouth guard was used to reduce the forces loading on the jaws and muscles. Electromyography (EMG) was used to determine the fatigue score of head and neck muscles after wearing the mouth guard. The results showed a significant reduction of fatigue scores ($p < 0.05$) was observed after wearing a mouth guard. The players reported that the use of mouth guard enhanced their performance with 100% satisfaction.

3. Fluoride supplement program: Fluoride containing mouth rinse was instructed to use before the training for caries prevention and tooth wear reduction. Moreover, fluoride containing CPP-ACP (Casein Phosphopeptide - Amorphous Calcium Phosphate) was additionally provided in the high risk caries players.

[Conclusion] Oral examination and periodically follow up are crucial as parts of the preventive program. They help identify the caries lesion and reduce the occurrence of caries, periodontal disease and other oral pathologies. Preventive program are important for professional football players. This project could be a model for improving the oral health and enhancing the performance of the football players of the other teams

AO-18 Dental anxiety among an adult population using the Modified Dental Anxiety Scale

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[Objective] This is a cross sectional study to assess dental anxiety and its association between socio-demographic factors and utilization pattern among adult patients attending 4 different dental clinics in the Faculty of Dentistry, University of Malaya.

[Methods] A total of 226 patients aged between 17 to 87 years participated in the survey. The questionnaire comprised of the respondents' socio-demographic profile and utilisation patterns. Dental anxiety was assessed by a single-item dental anxiety question and the Modified Dental Anxiety Scale (MDAS). Both dental anxiety measures were translated into Malay and back-translated into English. Data was analysed using SPSS version 17. The dental anxiety and association assessment employed the non-parametric statistics and multinomial logistic regression models (95% CI, $p < 0.05$)

[Results] The overall prevalence of dental anxiety according to MDAS was 92.9% (mean: 10.59, SD 3.84). Almost half (46.8%) were slightly anxious, one third (32.4%) were fairly anxious, 11.5% were very anxious and 4.0% were extremely anxious or phobia (using the cut-off point < 19). Only 7.1% reported no anxiety at all. Female participants were found to be significantly more anxious than males with mean MDAS scores of 11.64 (SD 3.60) and 9.73 (SD 3.88) respectively ($p < 0.05$). The dental drill and local anaesthetic injection showed the two highest mean MDAS scores being 2.32 (95% CI: 2.18, 2.46) and 2.85 (95% CI: 2.69, 3.02) respectively. There were no significant association between age groups, ethnicity, socio-economic status and utilization pattern of participants with dental anxiety. There was a significant correlation between the MDAS and the single-item dental anxiety question (Spearman's correlation, $r = 0.56$, $p < 0.01$).

[Conclusions] Highly dentally anxious were 15.4% with female participants reporting higher scores. The MDAS has the potential for measuring dental anxiety among Malaysian adults.

[Keywords] dental anxiety, adults, Modified Dental Anxiety Scale (MDAS)

AO-19 Coverage and efficacy of differing models of dental services available to residents of aged care facilities available in NSW

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【Objective】 To identify the number and proportion of NSW dentists and dental prosthetists currently active in providing oral health care services to their clients in residential aged care facilities in NSW and to identify the perceived barriers practitioners have to providing this care. These barriers will be evaluated against current models of oral health care in NSW and practitioners will be engaged at a local level in order to increase service delivery in Aged Care Facilities.

【Methods】 Dentists (approx. N=4,000) and Prosthetists (approx. N=400) who are members of their respective NSW Associations will be invited to participate in a survey to ascertain the type and frequency of oral health care they provide to their clients in aged care facilities.

【Results】 It was found that only a small percentage of NSW dentists and dental prosthetists across all sectors provided any regular oral health care to clients in aged care facilities.

【Conclusions】 Even though the residents who live in aged care facilities are the most vulnerable and frail there is still an expectation that they should travel to clinics in order to receive oral health care. Mobile, Outreach or Hub and Spoke models of oral care into aged care facilities are at the best ad hoc and poorly coordinated.

【Keywords】 residential aged care, oral health, model of care

AO-20 Social stratification, oral hygiene behavior and oral health status among older adults in China

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【Objectives】 Brushing as an important oral hygiene self-care behavior plays a critical role in preventing periodontal diseases and dental caries for older adults. This study explored the mediating effect of oral hygiene behavior -brushing on the relationship between social stratification and oral health.

【Methods】 965 community-dwelling older adults, aged from 64-74 years old in northeast of China was completed an oral health examination and a questionnaire about oral health behaviors. Structure equation modeling was used to test for mediation.

【Results】 The results showed that female, higher education and income, and living in urban were related to good oral health status and more frequent brushing. Brushing serves as a mediator between social stratification and oral health status.

【Conclusions】 This study suggests that regular brushing is an effective intervention to maintain oral health status among older adults.

【Keywords】 oral hygiene, oral health, brushing, structure equation modeling

AO-21 Are older men who claim good oral health actually happier?

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[Objectives] To describe the prevalence of self-reported oral health in a population of older community dwelling Australian men and the relationship of Quality of Life, Oral Health Related Quality of Life and oral health function to the perception of good oral health.

[Methods] The population comprised men who participated in the 8 year follow-up of the 1,705 men aged ≥ 70 years at the commencement of the Concord Health and Ageing in Men Project (CHAMP) drawn from Sydney, Australia. Approximately 75% of the original population participated in the follow-up. Oral health data, which included estimates of self-reported oral health status (Poor, Fair, Good, Very Good, Excellent) and capacity to chew foods (texture from soft to hard) were collected at follow-up. Information was also collected using the Short Form Health Survey (SF-12) estimate of Quality of Life, and the Oral Health Impact Profile (OHIP-14) to measure oral health related quality of life. Oral Health Function was measured using two estimates: a 12-item pain/discomfort set of questions; and the capacity to chew foods.

[Findings] The main research questions will investigate the association between the dependent variable (self-reported rating of oral health) and the independent variables related to quality of life (two variables) and oral health function (two variables). It is hypothesised that oral health function will have a mediating impact on quality of life estimates which will then be associated with different levels of self-reported oral health perceptions.

[Conclusions] Analyses will explore the nature of the relationship between oral health function, perceived quality of life and oral health status to answer the question of whether the better the perception of oral health in older Australian men, the happier they are with their daily lives.

[Keywords] quality of life, gerodontics

AO-22 A randomized trial of smoking cessation interventions conducted by dentists

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[Objective] The Global Adult Tobacco Survey (GATS) 2011 reported that tobacco consumption is still a major public health problem in Malaysia. The objective of this study was to investigate the effectiveness of a smoking cessation intervention delivered by dentists using the 5A's model versus brief advice (BA).

[Methods] Six Dental Public Health specialists posted at 6 dental clinics located in the Selangor state was recruited and trained to participate in this randomised control trial. They were randomized equally into two intervention groups, the 5A's and the BA intervention. All dental clinics enrolled patients into this study for a minimum of six months. Patients were called for follow-ups at 4 weeks, 3 months and 6 months after their initial visit for quit smoking. The main outcome measures were self-reported point prevalence abstinence and a carbon monoxide smokerlyzer to validate abstinence at 6-months follow-up.

[Results] At baseline, most subjects were at the preparation stage of smoking cessation (5A's n=108, 42.7%; BA n=145, 57.3%). There was an ascending positive change of smoking behaviour from 1-month to 6-months follow-up for 5A's, however at 6 months BA group falls slightly by 2.4%. A binary logistic regression analysis using subjects' abstinence at 6 months follow-up was carried out. The odd of quitters in 5A's intervention is 3.81(95% CI: 1.871-7.76; p=0.00) times higher compared to BA. After adding demographic variables, the OR for the 5A's was 2.11 (95% CI: 0.917-4.889, p=0.08) higher compared to BA. Subsequently, smoking characteristics of the subjects were added to the analysis and the OR for the 5A's was 1.90 (95%CI: 0.652-5.547; p=0.24) higher compared to BA.

[Conclusion] The 5A's model of smoking cessation intervention was found to be effective compared to BA in the dental setting. All smokers, regardless of motivation, should be offered assistance to quit.

[Keywords] dentists, smoking cessation, intervention, stage of change, tobacco, abstinence

AO-23 Knock-out of *ureI* from *Streptococcus salivarius* urease gene

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【Objectives】 To obtain the clone of *ureI* knock-out *Streptococcus salivarius* urease gene and detect its expression of ureolytic activity.

【Methods】 Polymerase chain reaction(PCR) was used to amplify 394-2038bp of *Streptococcus salivarius* complete urease gene *ureIABCEFGDMQO* obtained in previously published study. *Sph* I and *BamH* I were introduced to each end of the PCR product respectively and cloned into the vector pMD19T. The resulting plasmid was named I-short. The complete urease gene *ureIABCEFGDMQO* and I-short were digested by *Sph* I and *BamH* I at the same time. The truncated fragment was replaced into the complete urease gene to get the plasmid *ureABCEFGDMQO* and transformed into *Escherichia coli* TG-1. The amount of ammonia generated by *ureI* knock-out urease gene *ureABCEFGDMQO* was measured by Nessler's assay and compared to that of complete urease gene.

【Results】 It was proved by sequence analysis that *ureI* (1-394bp) was knocked out from *Streptococcus salivarius* urease gene. There was no significant difference between the amount of ammonia generated by ureolytic activity of *ureI* knock-out and the complete urease gene($P<0.01$).

【Conclusions】 *UreI* gene knock-out does not affect the ureolytic activity expression of urease gene, which is important for the neutralization of acid produced by glycolysis and prevention of dental caries. On the other hand, the current clone shortened the length of *Streptococcus salivarius* urease gene without impairing its ureolytic activity expression.

【Keywords】 *Streptococcus salivarius*, urease, dental caries
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AO-24 Anti-oxidant activities of Bromelain, its potential as anti-inflammatory and anti-carcinogenic agent

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【Objectives】 Bromelain have a variety of therapeutic abilities. Several preclinical studies have reported that Bromelain could be used as an anti-inflammatory agent and anti-carcinogenic agent. We investigated whether Bromelain has antioxidant activities. Furthermore the study was aimed to investigate the potent anti-inflammatory effects by scavenging the nitric oxide (NO) radical and the effects on the cell viability of oral cancer cells.

【Methods】 ROS elimination were evaluated using a variety of anti-oxidation effect tests containing DPPH assay (Electron donation ability assay), ABTS+ radical scavenging assay, Superoxide Dismutase (SOD) like assay, hydrogen peroxide (H₂O₂) scavenging assay, and Reducing power assay. Nitric oxide (NO) radical inhibition assay was used to investigate the potential as an anti-inflammatory effect. The effect of Bromelain on cell viability of Ca9-22 and SCC25 cells was determined using the MTT assay.

【Results】 After the addition of Bromelain, the superoxide radical ability was inhibited. Treatment with Bromelain exhibited significant scavenging abilities on superoxide radicals compared with control (no treatment with Bromelain). Bromelain reduced the NO *in vitro*. Bromelain at 0.625, 1.25, 2.5, 5 mg/ml effectively diminished the level of NO radicals in a dose-dependent manner. The effect on cell viability showed that Bromelain inhibited proliferation of Ca9-22 and SCC25 cells in a dose-dependent manner.

【Conclusions】 Bromelain showed strong scavenging activities on superoxide radicals. Also Bromelain showed the potent anti-inflammatory effects by scavenging NO radical *in vitro*. Treatment with Bromelain inhibited the growth and proliferation of oral cancer cells. These findings suggest that Bromelain may be utilized as anti-inflammatory and a chemotherapeutic reagent of oral cancer.

【Keywords】 Bromelain, anti-oxidation, anti-inflammation

Poster presentation abstracts

AP-1 Mothers' influence on oral health among indigenous schoolchildren

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【Objective】 This is a cross sectional study to assess the influence of mothers on oral health habits and status among indigenous school children in Malaysia.

【Methods】 A guided questionnaire survey was conducted among 53 mothers of indigenous schoolchildren at a community based oral health screening program. The questionnaire comprised demography and oral health habit of their children. Oral examination was then conducted on the children assessing their caries status. Statistical analysis was done using SPSS version 20 with level of significance set at $p < 0.05$.

【Results】 The mean age of mothers and children were 39.5 ± 8.9 years old and 9.9 ± 1.9 years old respectively. The highest level of education for mothers were primary school (79.2%), and only 13.2% worked. More than 60% of the fathers were fishermen and average monthly household income was less than RM500 (USD 118). Most mothers (96.2%) thought that their children's oral health is important but only six (11.3%) mothers brought their children to the dentist. The main reason for visiting was pain. Children with mothers who attended primary school were reported to have better brushing ($p < 0.01$) and snacking habit ($p < 0.05$) than those whose mothers did not receive formal education. More children who brushed their teeth daily (95.7%) had mothers who taught them how to brush ($p < 0.001$). In comparison only 10% of children whose mothers did not teach them how to brush had daily brushing habit. The percentage of caries free children was significantly higher among children who were taught how to brush by their mothers (87.0%) compared to those who were not (57.7%) ($p < 0.05$). The association between household income and caries status was not significant.

【Conclusions】 Formal education received by indigenous mothers has positive impact on children's oral health habits and caries status.

【Keywords】 indigenous community, oral health habit, oral health status

AP-2 Motivation of young patients with early permanent dentition seeking orthodontic treatment

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【Objectives】 To investigate on the motivation of young patients with early permanent dentition seeking for orthodontic treatment and classify the patient with their conditions on facial and dental aesthetics.

【Materials and Methods】 A survey regarding the motivation seeking for orthodontic treatment was designed and handed out to the new patients in Shanghai Jiading Dental Diseases Prevention and Cure Center. 1,000 patients with early permanent dentition from 11 to 15 years old were enrolled between July 2010 and June 2015. An oral examination was performed and recorded on each patient. The motivation for orthodontic treatment and occlusion relationship were analyzed using SPSS 16.0.

【Results】 The common motivations for patient seeking orthodontic treatment were the following factors: "crowding of upper anterior teeth", "crowding of upper and lower anterior teeth", "maxillary protrusion", "maxillary and mandibula protrusion", "crowding of lower anterior teeth", "mandibula protrusion", "malocclusion", "midline inconsistent", "diastema". The percentage of the patients with class I, II and III were 53.1%, 35.6%, 11.3%, respectively. There were no significant differences between females and males ($P > 0.05$). The percentage of females and males were respectively 64.7%, 35.3%.

【Conclusions】 "Crowding of anterior teeth" and "maxillary protrusion" seriously affect the facial and dental aesthetics and it may cause psychological problems for young patients in Jiading District in Shanghai. The patients in early permanent dentition should seek orthodontic treatment as soon as possible.

【Keywords】 motivation, early permanent dentition, orthodontic treatment, aesthetic

AP-3 Association between number of present teeth and self-rated oral health

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【Objectives】 The aim of this study was to evaluate factors of the number of present teeth (NT) associated with self-rated oral health and oral functions in Korean elderly adults.

【Methods】 This study was designed as cross-sectional study using the data of Korea National Health and Nutritional Examination Survey conducted from 2010 to 2012. Samples were selected by stratified clusters sampling. The subjects (n=7,079) composed of elderly adults aged 55-84 years who joined the oral examination survey and questionnaires. The respective variables reflecting demographic factors, self-rated oral health, oral health behaviors and oral functional scores were analyzed by complex sampling general linear regression analysis. Multivariable linear regression model considering covariates were applied to explain the associations between the number of present teeth and other variables.

【Results】 The self-rated oral health, daily tooth brushing frequency, smoking, and oral functional scores (chewing ability + speaking ability) were associated with NT ($P < 0.05$). The subjects with better self-rated oral health, higher daily tooth brushing frequency and higher oral functional scores had more present teeth than those with worse self-rated oral health, lower daily tooth brushing frequency and lower oral functional scores. The significant difference of NT was shown at smoking status among total subjects. However, smokers were 88.4% among males and 11.6% among females. The significant association was shown between NT and smoking status in a model selected males while no significant association was shown in a model selected females.

【Conclusions】 The design of interventions aiming to preserve present teeth in elderly people should be considered the demographic, oral functional factors and oral health behavioral factors.

【Keywords】 number of present teeth, elderly adults, oral health

AP-4 Study on the effectiveness of the Dietary Education Support Program to improve athletic ability

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【Purpose】 The previous research disclosed the relevance of masticatory and sport ability and the effectiveness of dietary education support program (DESP) aimed at improving masticatory ability and handgrip strength. This study examined the effect of DESP to the improving sport ability.

【Method】 Subjects are 14 track and field club students from a high school who consented to participation. Subjects were randomly divided into two groups: one group (4 males, 2 females) receiving DESP and control group (3 males, 5 females) who didn't receive DESP. After the health guidance from a dental hygienist prior to initiation of the trial. The subjects in DESP ate chewy donuts containing soymilk and soy pulp to which liquid konjak was applied. Subjects in this group were instructed to masticate consciously and ingest one donut per day for 30 consecutive days. To examine support ability, 100 m run time was measured before and after DESP trial and the change before and after was compared. Amount of sugar elution from chewing gum was measured to evaluate direct masticatory ability. Indirect masticatory ability was measured with Dental Prescale 50H Type R.

【Result】 In the group receiving DESP, the time of their 100 m run improved significantly from 14.15 sec to 13.98 sec ($p < 0.05$). In the group who didn't receive DESP, their time showed no significant difference.

【Conclusion】 DESP is effective in improving masticatory ability and 100 m run time in track and field. This study suggests that the improvement of masticatory ability is effective in improving sport ability and sport training.

AP-5 A report on Oral Health Care Activities to rural community of Myanmar by Dental Public Health Sector (DPHS), Myanmar Dental Association (Central) for the year of 2015

Aung Than

Dental Public Health Sector, Myanmar Dental Association (Central), Myanmar

【Objectives】 The major objectives of DPHS is to upgrade awareness of oral and dental diseases by given dental health education, to detect early diagnosis of diseases and to provide emergency treatment locally.

【Method】 This study is the report on Oral Health Care Activities to rural community of Myanmar that was done by Dental Public Health Sector (DPHS), Myanmar Dental Association (Central) for the year of 2015.

【Result】 Dental Public Health Sector (DPHS), of Myanmar Dental Association (Central) is taken responsibility to promote oral health status of the population of Myanmar at various area of the country.

The population includes pre-school children, primary and secondary school children, adult and elderly. The main activity emphasizes on children for usage of toothbrush with fluoridated toothpaste at the tooth-brushing drill at schools. The oral health care activities were included about Oral Health Education, Emergency Dental Care, and Epidemiological Surveys of their oral health status by using dmft/DMFT, oral hygiene index, periodontal status.

【Conclusion】 Finally, the report will be mentioned about a future plan of action for prevention based upon the field experience of 2015.

【Keywords】 Oral Health Care Activities, Dental Public Health Sector, Myanmar

AP-6 The prevalence, knowledge, opinions and recognition of C-type hepatitis among Korean and Mongolian

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【Objective】 In order to compare the data of the prevalence rate for C-type hepatitis in Korea and Mongolia.

【Methods】 The authors tested, by use of an Ora Quick Rapid Antibody Test Kit applied at the gingival mucosa to 200 adults in Korea and 178 in Mongolia. The recognition for C-type hepatitis was surveyed by use of a questionnaire for the some subjects in both countries.

【Results】 The prevalence rate of C-type hepatitis for adults in Korea was 1.0% and 14.6% in Mongolia. Most of the subjects prefer a test of C-type hepatitis by use of a Ora Quick Test Kit applied at the oral mucosa, as opposed to a method via a blood test. Most of the subjects thought that testing for C-type hepatitis was very important and the test should be done at dental or medical clinics. Economic factors were paramount in testing for C-type hepatitis in Mongolia however, the antibody test depended on the dentist's professional opinion at a dental clinic in Mongolia. The favorite method for C-type hepatitis test in Mongolia was the blood test because the Ora Quick Test Kit was not introduced extensively in Mongolia, even though it was thought that an important to test for C-type hepatitis at dental clinics.

【Conclusion】 Cooperative efforts are important for preventing C-type hepatitis for example, educating and informing people about the danger of C-type hepatitis and early detection.

【Keywords】 hepatitis viruses, Mongolia

AP-7 Barriers of implementation and reasons for non-compliance among toddlers recruited in “Toddlers Adoption Programme”: Dental nurse perceptions

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[Introduction] “Toddlers Adoption Programme” had been introduced to strengthen toddlers’ dental health services in the State of Pahang, Malaysia since 2009. After 3 batches of toddlers successfully completed their involvement a downward trend was observed in the compliance and percentage of Caries Free Mouth.

[Aim] The objectives of the study were to explore the barriers and reasons of nonconformity among toddlers recruited in the programme.

[Methods] In-depth-interview were conducted in office among eight dental nurses who were selected based on their experienced at least two toddlers drop-out from the programme and at least two toddlers experience non ‘Caries Free Mouth’ on completion of toddlers from the programme at the age of 4 years. Each session took within 25 to 30 minutes in a comfortable setting and after written consent obtained. Five questions were structured around pre-determinately. A note taker recorded each session, observed to include a sense of what each person said, and transcribed the verbatim. The information gathered and translated it into themes and codes on the important points for the study findings.

[Findings] Six conditions explained the shortfalls of the programme which were: (1) Parental attitude included being too tolerate to their child, absent due to others mother’s role and lack of passion to continue their involvement unless they were supported by their husband, (2) Loss of follow-up due to loss of contact, parents transferred, inflexibility on date of appointment given, (3) Child cooperation contributed to the failure especially when they were below 2 years-old and special need child, (4) Violation from standard operation procedure when dental nurse was supposed to apply the fluoride varnish using knee-to-knee position, (5) Sugary diet exposed among the child at home or nursery when they were taking care by their grandparents or caregivers and (6) Ineffective delivering of dental health talk lead to oral hygiene neglected among children at home.

[Conclusion] Barriers on implementation and nonconformity explored can be further overcome and improved by sharing the information.

[Keywords] toddlers, barriers, fluoride varnish, dental nurses

AP-8 Evaluation of 2015 oral health education program for elementary school in Korea

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[Objectives] The oral health of elementary school should be appropriately managed because the dental caries occur frequently in childhood changing their deciduous teeth to permanent teeth. In order to prevent decaying in children, we make the 2015 education program. Our goal is that we start to educate by modifying standard education program for every elementary school in Korea from 2016 after evaluating this 2015 program. All education is supported by Korea Ministry of Health & Welfare.

[Methods] The oral health education is designed for children under 3 grade in selected 250 elementary schools (4.2%) among the about 5,900 elementary, dividing 16 regions’ schools in Korea. In order to ensure the students and teachers’ effectiveness and satisfaction differences before and after the educating, the structured questionnaire is prepared. So far the oral health education is being conducted to in 50 schools and the rest of schools are 200. Our education committee consisted of fifteen members as professors of dental and hygiene schools.

[Results] The survey results of children have shown that the oral health education was 34%, 43% and 28% effective in improving the knowledge, practice and behavior of children, respectively, and were statistically significant ($p < 0.05$). And teachers’ satisfaction and necessity index about this kind of education is 4.23 ± 1.03 out of 5.

[Conclusions] This study has shown that this education program is effective on the children until now. Therefore based on this result, this oral health program will be consistently developed to offer a standard education to every school children for six years from 2016.

[Keywords] oral health education, elementary school, Korea

AP-9 Empowering kindergarten teachers to deliver oral health education to children

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[Purpose] The aim of the project was to empower and encourage kindergarten teachers to promote oral health among their kindergartens, particularly through curriculum development and knowledge transfer from the teachers to the children's parents.

[Method] This project comprised 5 repeated half-day educational workshops at the Prince Philip Dental Hospital, which targeted a total of 300 teaching professionals (teachers, vice-principals, and principals) from more than 50 kindergartens in Hong Kong. Through this project, the participating kindergarten teachers were encouraged and empowered to promote oral health to preschool children in their kindergartens, particularly through curriculum development and knowledge transfer from the teachers to the children's parents. The kindergarten staff were asked to share their thoughts, existing knowledge, and concerns about promoting oral health and self-care among children, passing on their knowledge to fellow teachers, and involving parents in the future. Meanwhile, appropriate oral health knowledge education was provided through problem-based learning. They were also given opportunities to give feedback via a questionnaire and in end-of-programme focus-group discussions.

[Results] A total of 282 teachers from 48 kindergartens attended training in the oral health promotion. All participants noted that they had learnt at least something new about the four topics presented in the seminars and discussed at the small-group problem-based learning discussions. Forty eight teachers were selected and they all participated for a satisfaction survey after the teacher workshop. Most (96%) said they were satisfied or very satisfied with the workshop.

[Conclusion] A dental health promotion project was successfully conducted to empower and encourage kindergarten teachers to promote oral health among their kindergartens. The feedback and evaluation demonstrated that this programme was well received by the participants.

[Keywords] kindergarten, oral health, promotion

AP-10 Dentist's opinions for the roles of the dental hygienist and dental assistant at the dental clinic, in Mongolia

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[Objective] Dental assisting is the important workforce for chair side dental assisting at dental clinics and different roles with the dental hygienist.

But it has been confused the roles of the dental auxiliary utilization in Asian countries, although it should be established the dental hygienist for oral health education and the preventive dental caries, otherwise dental assisting would be better for dental assistant.

Korea International Co-operation Agency(KOICA) has supported the establishment of the dental assistant system in Mongolia and both of Dankook University of Medical science, Mongolia have tried to establish the desirable system of dental assistant with the different roles for dental hygienist in Mongol, through the construction of the class room and development of the curriculum with publishing the text books for dental assistant.

[Methods] The author has examined the questionnaire survey for dentists' opinions about the roles of the dental hygienist and the assistant worked at the dental clinic, in order to help for deciding the proper roles for them with the dental works. 100 of dentists were answered by dentists working in hospitals who attended the seminar with a dentist who conducted the survey.

[Results] 1. Education, prevention part in more than 60% of dentists responding had wished to have a dental hygienist.

2. In part Dentist Dental Radiology responded to more than 50% of the dental assistant.

3. Basic dental works dentists responded that dental hygienists and dental assistant are both available.

[Conclusion] Dental assistant training supported by KOICA program was evaluated as success for establishing the system as rare in Asia. The different roles of dental assistant for chair side dental assisting should be suggested with dental hygienist as a manager for school dental clinic as one of the professional oral health professions, in Mongol as well as in Asia.

[Keywords] Mongolia dental assistant system, dental assistant, dental hygienist

AP-11 Oral health promotion in the interprofessional education

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Interprofessional education between dental and medical students is being implemented in Thailand at Suranaree University of Technology. Contemplative and transformative learning/education is the key to accommodate their virtual experiences for their preparedness after graduation as a family/community health care team. Part of the curriculum, especially in the earlier two years of education, dental and medical student study and practice in an assigned community as a family health care team. The assignment is to integrate introspection and experiential learning supported by academic and social engagement in controlling of health and oral health common risk factors. Principles of family medicine, epidemiology, community dentistry and humanized care are the main scientific background to be applied and practiced their skills in health communication, problem solving and humanized care. A community prevention program identified and facilitated by the community residence, local health personnel, administrative authorities could be health and/or oral health matters. The dental and medical students team up in planning, implementing and evaluating the health/oral health prevention and promotion program within four times (5 weeks) consecutively in the same assigned community through the first and second year of their education. Individual skill development and individual accountability and achievement that results from existing models of health professional training would create an effective teamwork of health professional being required for the enhancement of health outcomes in the provision of health care.

AP-12 Diet control program through the cariogenic potentiality index for each food in adults

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【Introduction】 Caries prevention through diet control can be achieved clinically by use of the computer program. The program analyzes the nutrient and cariogenic potentiality for a range of food commonly eaten by the average Korean adult. The cariogenic potentiality index of each food can be calculated with the sugar contents and the viscosity of each food applying the regression analysis on the variables. 278 favorite foods for Korean adults were examined.

【Material & Methods】 Seventy volunteers between the age of 20 and 30 participated in the clinical experiment. Participants were asked to record 5 consecutive days of dietary intake. Using the diet control program established by the cariogenic potentiality indices, we were able to determine an individual participants' average nutritional intake over the course of five days (calory, basic nutrient, cariogenic potentiality, sodium intake for a day, individually, were revealed from the computer program). In addition to such average data, we also know whether excess or deficiency for each item. The correlation between the intake of foods and the oral status for caries experience in subjects, were revealed.

【Result】 The average calory of the subjects was revealed as $2,082.52 \pm 657.87$ kcal as included in the recommendation level for Korean adults. But the average intake of sodium was $4,618.02 \pm 1,384.65$ mg/day, it was significantly higher than the recommended daily requirements (1,500-2,000mg) in Korean adults. Basic nutrient level for carbohydrate, protein, fat was within the recommendation level, as well as the clean food. The cariogenic potentiality index was estimated as 127.26 ± 47.49 minutes.

【Conclusion】 Computer program for diet control by use of the cariogenic potentiality index and the analysis for each nutrient was considered as useful for diet control in preventive dentistry clinically.

【Keywords】 cariogenic food, cariogenic potentiality, dental caries, diet control, sugar contents, viscosity of food

AP-13 Consumer using evaluation of brush-off patch type dentifrice

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【Objectives】 The purpose of this study was to confirm the possibility of future commercialization for brush-off patch type dentifrice through the evaluation of the usability and oral irritation.

【Methods】 Assessment of usability was compared with hand-off type patch (P' company) for 10 minutes each once a day for one week. 30 healthy participants evaluated the usability as a three-point Likert rating scale after use. Oral irritation was compared with general toothpaste (L' company). Usage condition of brush-off patch type dentifrice was once a day for 10 minutes and toothpaste was twice a day for 3 minutes respectively for one week. 20 healthy participants evaluated the oral irritation as a five-point Likert rating scale after use.

【Results】 As a result of comparing the user step-by-step satisfaction, brush-off patch type dentifrice was significantly high in terms of adhesive position, adhesive strength, adhesion persistence and overall satisfaction compared with hand-off type patch ($P < 0.05$). But there were no significance in terms of foreign body sensation, remove ease, removal easiness, remaining sense, and the satisfactory feeling after the removal ($P > 0.05$). In the assessment of oral irritation, brush-off patch type dentifrice was low at irritation during use, irritation after use and after use persistent irritation and so on, however, there were no statistical significance compared with the use of toothpaste ($P > 0.05$).

【Conclusions】 Usability of brush-off patch type dentifrice showed more convenient than hand-off type patch and its irritation of it was evaluated in a similar level to the general toothpaste.

【Keywords】 patch type dentifrice, brush off, irritation

AP-14 No! 333, Yes! 123 in Tooth Brushing Campaign

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【Objectives】 3-3-3 Brushing Method Campaign was recommended to the people thanks to high awareness, education effect and publicity. However, the necessity about new teeth brushing campaign has been suggested recently, because of the low scholar evidence and practice over 3-3-3 Brushing Method Campaign. Therefore, the purpose of this study is to propose the paradigm of new teeth brushing campaign based on the research and brushing method of each country.

【Methods】 The campaign is claimed on the basis of the preceding articles and directions related to toothbrushing. In particular, We would to deploy based on the grounds of the ADA, the pioneer in the study of these practices.

【Results】 The meaning of 1-2-3 Brushing Campaign is like the below. First, the meaning of 1 of the 1-2-3 Brushing Campaign is a tooth brushing within 1 minute after having a meal. Second, '2' is that a tooth brushing should be continued at least for over 2 minutes. Third, '3' is the person should be brushing teeth at least 3 times a day-just after having a meal. At last, the meaning of the 7 is that a person should rinse the mouth over 8 times whenever it brushes teeth.

【Conclusions】 3-3-3 Brushing Method Campaign has many advantages, but disadvantages. Especially, there is a need to think about which affects the risk the whole body health after tooth brushing, because 3-3-3 Brushing Method Campaign is focused only on the brushing time and the number of the brushing. Therefore, 1-2-3 Brushing Campaign is very important on the point of view that suggests the right way of tooth brushing and guideline which is necessary to ensure the safety of the whole body health.

【Keywords】 toothbrushing, 3-3-3 campaign, 1-2-3 brushing campaign

AP-15 Clinical study on fluoride iontophoresis method for Lao children

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【Objective】 The effect of the fluoride iontophoresis method was calculated through the performing the school fluoride application program in Lao People's Democratic Republic (Lao PDR).

【Methods】 Total 1,596 students at Vientiane, in Laos, for 3 years, were participated in this study. And 2% NaF was applied with the iontophoresis method (F-ionDCS; Dr-Prevent Co., Seoul, Korea), for 3 times per a visit and 3 times visit per a year, after oral health education, in order to check the decayed, missing, filled permanent tooth (DMFT) or decayed, missing, filled permanent tooth surface (DMFS), decayed and filled primary tooth (dft) and decayed and filled primary tooth surface (dfs) to estimate the prevention effect for dental caries.

【Results】 Caries prevention effect was revealed as 42.3% in 3rd grade, 27.0% in 4th grade 31.4% in 5th grade estimated with DMFT index and compared with the control group, moreover, 41.5%, 42.1%, and 34.6% of prevention effect measured by DMFS index.

【Conclusion】 Fluoride application with iontophoresis method by use of 2% NaF solution was effective for caries prevention in Lao children and it was recommended to extend this program to all primary schools in Lao PDR.

【Keywords】 Laos, topical fluorides, iontophoresis

AP-16 Dental survey of the adolescent at Gwangju-si for water fluoridation

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【Objective】 Dental survey was performed for adolescent at Gwangju-si order to evaluate the caries prevention effect of the water fluoridation for 15 years, and the questionnaire was performed to investigate such consciousness for caries or periodontal disease and toothbrushing habit for adolescent at Gwangju-si.

【Methods】 Five hundred fifty-eight adolescents as 252 in age 12 years, 306 in age 15 were examined the oral health by 2 trained dentists and 3 staffs and caries experience data were collected to compare the data with the national survey.

【Results】 Decayed, missing and filled teeth (DMFT) index in 12 years old was 1.10 and decayed, missing, and filled surfaces (DMFS) was calculated as 1.52. DMFT index in 15 years old was estimated as 2.59 and DMFS index was 3.79. Caries experience was lower in both age groups at Gwangju City than at middle city in national survey data ($p < 0.05$).

【Conclusion】 Caries experience was lower in adolescent group at Gwangju-si than in national survey, so, water fluoridation for 15 years might be effective for caries prevention at Gwangju area. It was recommended that water fluoridation at this city should be continued.

【Keywords】 dental caries, fluoridation, water supply

AP-17 Caries preventive effect of a 6-year water fluoridation program

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【Objectives】 The aim of this study was to evaluate the caries-preventive effect of a 6-year water fluoridation program (WFP) in Geoje City, Korea, with reference to the caries prevalence before WFP and current non-beneficiaries in Geoje City.

【Methods】 Before the introduction of WFP in Geoje City, 671 children aged 8 and 12 years were examined in 2007. The WFP in some areas of Geoje City has been implemented since November 2008. In 2015, 1,537 children aged 8, 10 and 12 years living in fluoridated or non-fluoridated area were examined by a dentist who examined children before WFP. Caries-preventive effect was estimated by assessing the differences of DMFT scores between the children with WFP in 2015 and children before WFP in 2007, and the children without WFP in 2015. The univariable analysis of variance adjusted for gender and number of fissure-sealed teeth was conducted.

【Results】 Before WFP, DMFT of 8- and 12-year olds were 0.86 and 2.30, respectively. In 2015, DMFT of 8-, 10- and 12-year olds were 0.43, 0.70, and 1.49, respectively in fluoridated area and 0.40, 0.94, 1.62 respectively in non-fluoridated area. The significant caries preventive effect among 8- and 12-year olds compared to DMFT before WFP were estimated 59.7% and 50.5%, respectively. The significant caries preventive effect among 10-year olds compared to DMFT of children in non-fluoridated area in 2015 were estimated 30.4%.

【Conclusions】 Within the limitation of the study, the current findings show that the Water Fluoridation Program in Geoje City, Korea reduces the prevalence of dental caries and is therefore worth being promoted as a public oral health program.

【Keywords】 caries, epidemiology, fluoride

AP-18 Outreach service to promote oral health for kindergarten children

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【Background】 The latest oral health survey reported by the Department of Health found half of the 5 years old Hong Kong children suffered from early childhood caries.

【Objective】 This service aimed to set up an outreach dental service to promote oral health of kindergarten children in Hong Kong.

【Methods】 This is an outreach dental service involving a total of 3,259 children in 27 kindergartens in 2014-2015. The parents of the children were invited to let their children to receive oral health education and dental check up every six months in the kindergartens. Parental consent were obtained before dental check-up and the parents were asked if they would allow untreated caries found in their child to receive topical application of 38% silver diamine fluoride (SDF) solution. The children were advised to see a dentist for subsequent treatment.

【Results】 A total of 3,259 children were invited to join this service project, 2,590 children were screened and 288 children had untreated dental caries. The caries were treated with 38% SDF solution. No side effect was reported for the SDF treated children. There was 37.2% of SDF-treated caries was found arrested at the subsequent 6-month follow-up. The feedbacks by kindergarten teachers and parents of the children were good.

【Conclusion】 An outreach dental service were set up to promote oral health of kindergarten children. The service was well received by the kindergarten teachers and parents of the children.

AP-19 Oral health index for kindergarten and school children by use of the computer program for incremental dental care system

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[Objective] The author has surveyed oral health index for preschool and school children, by use of the computer program for incremental dental care system, which had been developed in order to use for prevention oriented new dental care with capitation fee system in Korea, through the consideration of such factors as the numbers of natural teeth, caries status, periodontal status, the other oral status and systemic conditions or oral care habits for individual, with the different weight points, be calculated by regression model.

[Methods] Eighty two preschool and school children were participated after signature on the agreement by their parents, and oral health index were calculated automatically from the computer program and the average and the standard deviation were revealed to estimate the range of points according to each grade of oral health at each aged group.

[Results] The average oral health index for preschool children was revealed as 92.7 points to 100.0 for A grade, 86.8 to 92.6 points for B grade 80.9 to 86.7 points for C grade, 75.1 to 80.8 points for D grade and under 75.0 points for E grade. The average oral health index for school children was estimated as over 96.7 points for A grade, 90.5 to 96.6 points for B grade 84.4 to 90.4 points for C grade, 78.3 to 84.3 points for D grade and under 78.2 points for E grade. It showed the normal distribution graph for the numbers of the subjects included according to the grade of the oral health, both in preschool children group and in school children group.

[Conclusion] It was recommended that a new grade system for oral health index, consideration with the weight point for each factors could be used to estimate individual oral health index and to decide the grade of oral health, in clinical.

[Keywords] oral health index, incremental dental care system

AP-20 Contribution of nasi papah tradition towards the occurrence risk of Early Childhood Caries (ECC) at Senyur village—Lombok Timur 2015

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[Background] The infant feeding practices usually affected by cultural tradition especially in rural areas in Indonesia. One of that tradition is Nasi Papah, which one of that were done by mothers at East Lombok regency, West Nusa Tenggara Province. Nasi papah is define as feeding practice between mother to their infant through pre chewed rice by mother before the food given to their child. For oral health, this behaviour is one of risk factors for ECC, where vertical transmission frequently transmitted *S. mutans* from mother to child through salivary contact.

[Aim] To analyzing the contribution of nasi papah tradition towards occurrence risk of Early Childhood Caries.

[Materials and Methods] This study using cross sectional design with total sampels are consists of 186 children between 6-60 months old accompanied by his/her mother, whose living at Senyur village, East Lombok regency, West Nusa Tenggara Province. The intra oral examination had been done for valued caries experience through DMFT/deft index and informations about oral health behaviour and mother knowledges related to oral health derived from mothers through questionnaire and data analyzed by Chi Square and logistic regression tests.

[Results] Risk of nasi papah tradition towards ECC has OR 5.46 (CI 95% 4.24-36.55, P<0.001) and the contribution of this behaviour to ECC was 41.8%.

[Conclusion] Nasi papah tradition contributes towards the occurrence risk of Early Childhood Caries.

[Keywords] nasi papah, oral health behaviour, *S. mutans* transmission, ECC

AP-21 Early childhood caries among 5- to 6-year-old children in Southeast Asia

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【Objective】 The aim of this study was to examine the prevalence and experience of early childhood caries among 5- to 6-year-old children in Southeast Asia.

【Methods】 A literature search was conducted using three electronic databases (PubMed, EMBASE and ISI Web of Science) to identify publications from the years 2006-2015. Additional hand searches of government reports and national institute studies were performed. Both primary and secondary data sources were included in the study. The inclusion criterion was reported findings on the caries prevalence and/or caries experience in dmft or dmfs scores of 5- to 6-year-old children in Southeast Asian countries. Retrieved papers were assessed by two independent reviewers, and the final decision was made by consensus.

【Results】 The search identified 320 papers for screening; 293 papers were excluded, and 27 full papers were retrieved and reviewed. Finally, 12 papers were included. Variations in caries prevalence and caries experience existed across the countries. The caries prevalence of 5- to 6-year-old children ranged from 25% to 95%, and the caries experience in mean dmft scores ranged from 0.9 to 9.0. The median caries prevalence and caries experience (mean dmft score) of children aged 5-6 years old were 79% and 5.1, respectively.

【Conclusion】 Based on the included studies, which are of limited in quality and quantity, there is evidence that caries prevalence and experience are high amongst preschool children in Southeast Asia.

【Keywords】 dental caries, preschool children, Southeast Asia

AP-22 Investigation and analysis of dental caries present status of students in Jiading District of Shanghai in 2014-2015

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【Objective】 To obtain the information of the prevalence of dental caries of students in Jiading District and to provide evidence for the further intervention.

【Methods】 According to the third national oral health epidemiological investigation methods and standards, from September 2014 to August 2015, the oral health of students were examined by dentists. The simple dental caries were all filled in for free, School-age children are closed nest groove, and fluoride, all the parents informed consents before treatment.

【Results】 In 2014-2015 Jiading District of Shanghai, in kindergarten, primary school and middle school, the students check number was respectively 14,283, 28,575, 14,283, total of 62,529 students. The dental caries prevalence rates were 47.26%, 57.66% and 23.10%, the average was 44.41%. The filling rates were 68.00%, 61.00% and 72.00%, total filling rate was 64.09%. Compared with five years ago, the caries prevalence rate was reduced and the filling rate was higher. There were significant differences ($P < 0.01$).

【Conclusion】 In Jiading District, the students caries disease prevention and treatment effect are remarkable, but the caries rate is still at a high level. It is still necessary to increase prevention efforts to reduce the incidence of dental caries.

【Keywords】 dental caries, caries prevalence rate, filling rate, investigation analysis

AP-23 The development and utilization of the computer program for dietary control on the prevention of dental caries for the children

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【Objective】 The objective of this study is to measure the sweetness, viscosity of food, and resulting cariogenic potential index to help developing the dietary program for the prevention of dental caries and for improving oral health with better dietary habits.

【Methods】 For this study, 271 foods which were favored Korean children were chosen to estimate the cariogenic potential index through calculating the degree of sugar and the viscosity of each food, and computer program for dietary control was developed. Ninety nine children(61 boys & 38 girls) within schools in Gyeonggi-do were randomly selected and joined the program with volunteer.

【Results】 There was a positive correlation among carbohydrates, cariogenic potentiality and Snyder test($p < 0.01$). Significant correlation between protein intake and fat intake was found($p < 0.01$). The proportion of 3 main nutrients(carbohydrates, protein and fat) intake per day was proper ratio by 2010 Dietary Reference Intakes for Koreans($p > 0.05$). Sodium average intake was $3,772.27 \pm 1,350.42$ mg that was 2.5 higher than target intake and 1.8 higher than sufficient intake per day($p > 0.05$).

【Conclusion】 Dietary analysis and Recommendation Computer Program was appraised as useful for dietary control for dental caries prevention for children in clinical practice.

【Keywords】 dental caries, dietary control, Korean foods

AP-24 Analysis on the dental condition of middle and primary schools and kindergartens in Jiading District among 2010 to 2012

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【Objectives】 To obtain the information of the prevalence of dental caries among students in Jiading District, and to provide evidence for further study on objectives of public dental cares and management modes.

【Methods】 According to the third national oral health epidemiological investigation method and standard, oral examination of students in middle, primary schools and kindergartens from September 2010 to August 2013, all the parents signed informed consents before treatments, the moderate and shallow cavities were all filled in for free, pit and fissure sealant were provided for the sixth-year molars among first and secondary students over the three-year study period. The SPSS 16.0 software was adapted and used to statistically analyze the data.

【Results】 The caries prevalence rates of the students in kindergartens, primary schools, middle schools of Jiading District were respectively 49.85%, 50.33%, 54.71% over the three years. Caries prevalence rate of Jiading students reduced significantly while the filling rate shows a marked increase, the contrast has significance ($P < 0.0001$). Caries prevalence rate and filling rate were higher than average level of Shanghai over the same period. There were significant differences between Jiading District and Shanghai ($P < 0.0001$).

【Conclusions】 The circumstance of students in Jiading District is serious. Supervision and administration should be strengthened, the measures of continuously improving students' oral public health should be taken to decrease the occurrence of the caries prevalence.

【Keywords】 dental caries, caries prevalence rate, filling rate, public prevention mode of dental health

AP-25 Oral health status and OHRQoL among indigenous children in Malaysia

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【Objectives】 To assess the oral health related quality of life (OHRQoL) among indigenous children in Cameron Highlands, Pahang state, Malaysia and its association with oral health status parameters.

【Methods】 A cross sectional study was conducted on 250 indigenous school children aged 11-12 years old attending primary schools designated for indigenous children in Cameron Highlands. Subjects were asked to complete a survey questionnaire designed to measure OHRQoL by using the Malay version of Child Oral Impacts on Daily Performances (Malay-Child OIDP) index. Full mouth examination was also carried out.

【Results】 All 227 participants (response rate=90.8%) completed the questionnaire. 58.6% of them reported having at least one oral impact on their daily life. The highest prevalence of oral impacts were reported on eating (35.2%), cleaning teeth (22%), relaxing (36%) and emotional stability (36%). The severity of impacts intensity was high for cleaning teeth (2.8%) and doing homework (1.8%) and low for emotional stability and eating. Among the children with impacts, 80.4% had 1-3 daily performances affected. The most prevalent oral conditions causing impacts were gum bleeding (66.2%), toothache (56.4%) and fractured tooth (52.6%). Low levels of dental caries were reported with mean DMFT and dft values of 0.72 and 0.42, respectively. 62.6% children had a CPI score of 2 (calculus on the tooth surface) while 33.5% had bleeding on probing. The Child OIDP scores were significantly correlated with DMFT score (p value<0.05).

【Conclusions】 The study showed that oral impacts on daily performances in indigenous children in Cameron Highlands were prevalent but with not very severe impact intensity. Main causes for oral impacts were gum bleeding and toothache. Low level of dental caries with high prevalence of periodontal problems was found in this group of children. The OHRQoL was correlated with caries scores.

【Keywords】 indigenous children, oral health, quality of life, Malaysia

AP-26 Appropriate age to examine Molar Incisor Hypomineralization in Thai children

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【Objectives】 The European Academy of Paediatric Dentistry (EAPD) suggested that Molar Incisor Hypomineralization (MIH) should be examined at eight years of age, at which time most of the children would have all first permanent molars (FPM) erupted. However, delay in diagnosis could lead to an underestimation of MIH prevalence since dental caries and post-eruptive enamel breakdown might mask the MIH lesions. This longitudinal study aimed to determine the best timing for MIH examination by comparing the prevalence and clinical characteristics of MIH in a birth cohort of Thai children who were examined three times at the ages of 6, 7 and 8 years.

【Methods】 The study was conducted in children who participated in the Prospective Cohort Study in Thai Children. The analysis included 519 children who received oral examinations according to the EAPD criteria in three consecutive years.

【Results】 Among the children who had at least 1 erupted FPM, the prevalence of MIH was 19.4%, 19.0% and 19.3% when they were 6, 7 and 8 years old, respectively. Among those with all 4 FPMs erupted, the prevalence was 21.2%, 18.8% and 19.3%, respectively. Demarcated opacity was the most common characteristic found at all ages. The second most common lesion was post-eruptive enamel breakdown that was increased in occurrence with advancing age. The mean numbers of FPMs affected with MIH were similar at all time points.

【Conclusions】 The prevalence of MIH examined at 6, 7, and 8 years of age are comparable. However, the defects become more severe as the children's age increases. Early detection of MIH is important to prevent the enamel breakdown and subsequent dental caries. Therefore, the MIH examination should be performed as soon as the FPMs erupted at 6-7 years of age.

【Keywords】 Molar Incisor Hypomineralization, MIH, prevalence, longitudinal study

AP-27 Psychometric properties of the Malay-OIDP index and the prevalence of oral impacts in institutionalized Malaysian elderly population

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[Objective] To determine the psychometric properties of the Malay-OIDP index and to assess the prevalence, intensity and extent of oral impacts among institutionalized Malaysian elderly population.

[Methods] This cross-sectional study was carried out on Malaysian elderly population aged 60 years and above who were living in nursing homes in Petaling Jaya. A total of 97 met the inclusion criteria, but only 84 agreed to participate (response rate=86.6%). A face-to-face interview was conducted to obtain the respondents' sociodemographic background, their self-perception of health and oral health and their oral health-related quality of life using the Malay-OIDP index. The OIDP index assessed whether the respondents had any difficulty in carrying out ten common daily performances in the past six months due to their oral health problems. For each reported oral impact, the frequency and severity of the impact were also assessed. The psychometric properties of Malay-OIDP index was assessed based on their reliability and validity.

[Results] The standardized Cronbach's alpha of this study was 0.774, indicating a good reliability of the Malay-OIDP. Respondents with low self-rated satisfaction of teeth and gum, perceived dental treatment needs and had difficulty in chewing had higher OIDP scores compared to their counterpart, indicating a good validity. About 28% of the respondents had oral impacts on their daily performances. The most frequently performance affected was eating (17.9%), followed by speaking clearly (7.1%). The performances impact intensity reported were mostly moderate impact. Nineteen percent of the respondents had only one performance with impact (PWI).

[Conclusions] The Malay-OIDP index has a good reliability and validity among randomly selected institutionalized elderly population in Malaysia. The oral impacts affecting their performances were relatively low.

[Keywords] Oral impacts on Daily Performances (OIDP), Malay-OIDP, Oral Health Related Quality of Life (OHRQoL), psychometric properties, Malaysian elderly population

AP-28 Risk factors associated with aspiration in older persons requiring long-term care: An investigation with a 2-year follow-up

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[Objectives] Although aspiration is a life-threatening issue, especially for older persons who require special care, little is understood about its long-term effects and its associated risk factors. This study aimed to examine the prevalence of aspiration-associated risk among older Japanese rural population requiring long-term care by using 2-year longitudinal data.

[Methods] The survey was conducted in 2013, 2014, and 2015. The participants were 162 Japanese older people aged ≥ 60 years (32 men and 130 women) who required long-term care. The participants were residents of Akita prefecture, Japan.

The survey items included basic information (age, sex, and the presence of systemic disease), severity of dementia, care-needs certification, Barthel index, nutritional status, oral health status (number of teeth and oral hygiene status), and oral function. The results of modified water-swallowing test and cervical auscultation were used to categorize the presence or absence of aspiration. Multiple logistic regression analysis was performed to assess the risk factors associated with aspiration for 2 years.

[Results] The incidence of aspiration-associated risk was 17.9% (n=29) at the baseline and 23.5% (n=38) during the follow-up period. Severity of dementia, care-needs certification, the presence of stroke, Barthel index, nutritional status, and oral function significantly differed according to the presence or absence of aspiration-associated risk. Additionally, female gender (odds ratio, 0.21; 95% confidence interval, 0.05–0.88), body-mass index (odds ratio, 0.80; 95% confidence interval, 0.68–0.94), oral hygiene (odds ratio, 13.17; 95% confidence interval, 1.28–135.81), and gurgling ability (odds ratio, 5.61; 95% confidence interval 1.66–19.01) were significantly correlated with the incidence of aspiration-associated risk factors.

[Conclusions] The results of the present study suggest that comprehensive assessment and intervention, including oral management and nutritional supplementation, are necessary for aspiration risk management.

[Keywords] oral function, aspiration pneumonia, care needs

AP-29 Clinical application of Dental Care System for prime of manhood and senile aged group in Korea

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【Objective】 The ideal system for dental care is known as the prevention based incremental oral health care system. It means the best dental care system through supplying preventive measures continuous every year under the capitation fee system on preventive cares by use of the individual oral health index in clinical. So, the standardization for the level of annual payment for dental care fee according to the individual oral health index should be developed in each aged group for clinical use.

【Subjects and Method】 The incremental Dental Care System program (DCS program, Dr. Prevent, Korea) which was developed in consideration with such factors as the numbers of residual natural teeth, caries state, periodontal state, the other oral conditions and oral hygiene habit or systemic conditions, through applying the weight rate for each factor by age group, to individually for all subjects. For the study, 80 volunteers participated the program. To decide the scale range for each level of the individual oral health index, subjects were divided into two groups according to their age. 40 subjects age under 65 were group 1 and 40 subjects age over 65 were group 2.

【Results】 It was estimated that for group 1 (age under 65), score for class A was over 88.47 and class B score was ranged from 84.36 to 88.47, class C was ranged from 76.15 to 84.36, class D was ranged from 72.04 to 76.15 and class E was under 72.04 score. For the age over 65 group of the prime of manhood, score range for class A was over 83.47, class B was ranged from 79.55 to 83.47, class C was ranged from 75.63 to 79.55, class D was from 71.70 to 75.63 and class E was under 71.70.

【Conclusion】 Newly calculated and suggested point scale range would be proper to applying for DCS program to estimate individual oral health index and its application for clinically.

AP-30 Differential factors affect the appetite in AD and MCI patients

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【Objective】 Appetite loss in older people can lead to malnutrition and a decrease in weight, muscle mass and immune function, and thereby interfere independent living. Additionally, it is sometimes difficult to manage appetite loss in patients with cognitive impairment. Therefore, it is important to screen appetite in those patients. The aim of this study was to clarify what is associated with appetite loss in patients with Alzheimer's disease (AD) and mild cognitive impairment (MCI).

【Methods】 A total of 1,309 AD and 506 MCI patients who consulted The Center for Comprehensive Care and Research or Memory Disorders of National Center for Geriatrics and Gerontology between September 2013 and July 2015 were enrolled. We assessed the basic information including eating behavior, and performed cognitive assessment, measurement of body composition and blood test. We used a Council on Nutrition Appetite Questionnaire (CNAQ) for the assessment of patient's appetite and carried out multivariate logistic regression analyses to determine odds ratios (ORs) for CNAQ<29 with covariates identified by univariate analysis ($p<0.1$).

【Results】 Mini Nutritional Assessment-Short Form (MNA-SF) and Geriatric Depression Scale (GDS) were significantly associated with appetite loss in AD patients (OR=0.85, $p=0.009$, and OR=1.12, $p=0.006$, respectively), while GDS and difficulty in maintaining attention while eating were in MCI patients after adjusting with confounding factors (OR=1.14, $p=0.008$, and OR=5.66, $p=0.001$, respectively).

【Conclusions】 GDS was significantly associated with appetite loss in AD and MCI patients; however, MNA-SF was only associated with appetite loss in AD patients, and difficulty in maintaining attention while eating was only associated with appetite loss in MCI patients. Therefore, it is important to assess mood in patients with cognitive impairment to avoid malnutrition and to realize that the difficulty in maintaining attention while eating might affect the appetite in MCI patients.

【Keywords】 appetite, Alzheimer's disease, mild cognitive impairment

AP-31 Oral health of the adults and the senile for the denture needs in Nepal

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【Objectives】 Nepal is a country with a population of 30 million peoples, located in highland mountain regions of Central Asia. Nepal's oral health status is poor compare to other Asian countries. To investigate the dentures needs, dentures wore rate and requirement/demand of dentures for prime of manhood and elderly would be very important to establish the oral health policy in Nepal. So, for this reasons estimated the number of dentists and dental technicians to be helpful to the Nepal Oral Health improvement in the future.

【Methods】 Through a questionnaire survey for 400 peoples from age 30 to 60, who lived in city and countryside of Nepal residence were participated in this study to examine the numbers of tooth loss, rate of dental caries as well as periodontal disease, reason for the tooth extraction, dentures possession as well as hygiene, frequency of dental visits were surveyed with a questionnaire method and the obtained results were as follows.

【Results】 Nepal adults and senile have had a 74% loss of teeth with caries experience among them 70.3% people have no any prothodonts and dentures. 77.5% adults/seniors had lost a tooth and never felt the need to visit the dental clinics. Nepalese people have been investigated that due to poor economy have not received dental services.

【Conclusions】 In order to improve the good oral health for the people of Nepal need oral health education, reasonable cost and large number of dental clinics, dentists, and dental technicians must be supplied.

【Keywords】 Nepal oral health, denture need, Nepal oral health habit, dentistry in Nepal

AP-32 A clinical study on IgY contained chewing gum influence to periodontium

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【Objective】 This study has been performed, in order to prove the evidence for the effect of the chewing gum contained with IgY influence to Periodontium.

【Materials and Methods】 62 adult volunteers who had agreed the clinical experiment for chewing gum with IgY were selected as divided with an half for experimental group and the others for the control group.

The clinical experiment was performed by supplying the chewing gum with IgY for experimental group and without IgY for control group as for a placebo effect.

Oral examination for the subjects was done on one, 2 and 4 weeks later, for the following items with the standardization.

【Results】 1. Critical periodontal index also has been decreased in experimental group, but no different from in control group for 4 weeks later.

2. Papillary, Marginal and Attached(PMA) index for inflammation state at the anterior teeth on upper and lower gingiva was checked and it showed less index for PMA in experimental group than in control, for 4weeks use of IgY contained chewing gum($P<0.05$).

3. Oral malodor was checked as decreased remarkably in experimental group with using IgY chewing gum for 4 weeks, compared with the control group.

【Conclusion】 In general, it was considered that the use of IgY contained chewing gum would be effective to control the early stage of gingivitis because of the evidence for decreasing PMA index and oral malodor in clinical test, and recommend to use as one of the health functional diet food for oral health. More clinical tests related with the oral micro-organism and IgY contained chewing gum would be recommended to be performed.

【Keywords】 Immunoglobulin Y, periodontal disease, gingivitis, IgY chewing gum, oral malodor

AP-33 The influence on the recognition for periodontal care to oral micro-organism changes in dental implant patients

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【Objectives】 In oral to investigate the influence on the recognition for periodontal care to oral micro-organism changes in dental implant patients.

【Methods】 Eighty seven volunteers of implant patients were participated in this clinical study for out patients at the dental clinics located in Seoul and Kyunggi areas, through the questionnaire method for the recognition and the behavior test, oral examination, oral malodor test and oral micro-organism check with real-time PCR test. The relationship between each factor was analyzed as followings.

【Results】 Such oral micro-organism as *Fusobacterium nucleatum* and *Parvimonas micra* were revealed in all subjects and *Eikenella corrodens*, *Prevotella intermedia*, *Porphyromonas gingivalis* were existed in the subjects in order. And then, *Tannerella forsythia* and *Prevotella nigrescence* were revealed in half of the subjects, otherwise *Eubacterium nodatum*, *Treponema denticola*, *Campylobacter rectus* and *Aggregatibacter actinomycetemcomitans* were shown in a little number of the subjects. There was a relationship between the alcohol drinking habits and the amounts of *T. forsythia*, and the period of scaling and *A. actinomycetemcomitans*, otherwise the satisfaction of the dental implant and *P. gingivalis*($p<0.05$).

【Couclusion】 The recognition and the behavior to care for periodontal disease in dental implant patients, were implant to control the amounts and the activity of certain oral micro-organism, related with the cause of periodontal disease, and it was recommended to enhance the recognition of periodontal disease and proper behavior for dental implant patients in clinical.

【Keywords】 dental implant, micro-organism, periodontal disease

AP-34 The relationship between halitosis and gastrointestinal diseases

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【Objectives】 The aim of this case-control study was to investigate the relationship between halitosis and *Helicobacter pylori* infection in stomach and the relationship between halitosis and gastric ulcer.

【Methods】 Two hundred and twenty six subjects without periodontal diseases and systematic disease (except *Helicobacter pylori* infection and gastric ulcer) were included. Halitosis was diagnosed by $OS\geq 2$ and $VSC\geq 110$ ppb respectively. Infection of *H.pylori* was diagnosed by biopsy and gastric ulcer was diagnosed by gastroscopy. Clinical examination (include malodour test and oral examination) and questionnaire survey were conducted before gastroscopy. SPSS19.0 software package was used to analyze the data.

【Results】 All the subjects were periodontal healthy according to the periodontal index. The prevalence of gastric ulcer in halitosis subjects diagnosed by $OS\geq 2$ was significantly higher than that in the normal subjects (39.3% vs. 11.9%, $P<0.01$). The prevalence of *H.pylori* infection in halitosis subjects was significantly higher than that in the normal subjects (60.7% vs. 22.9%, $P<0.01$). Logistic regression analysis showed that gastric ulcer and *H.pylori* were the significant variables in the equation, and the adjusted OR were 2.9 and 4.6 respectively ($P<0.05$). When diagnosed by $VSC\geq 110$ ppb, adjusted OR of gastric ulcer and *H.pylori* infection were 2.6 and 9.3 respectively ($P<0.05$).

【Conclusions】 Gastric ulcer and *H.pylori* in stomach may be involved in the presence of halitosis in periodontal healthy subjects. Further large scale sample prospective studies should be done to verify the cause-effect relationship between gastric ulcer, *H.pylori* infection and halitosis.

【Keywords】 gastric ulcer, halitosis, *Helicobacter pylori*

AP-35 *In vivo* study on the subsidal effect of gingivitis by use of the dentifrice with centella and magnolia components

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【Objective】 Extract is known as a component for the anti-inflammatory effect and the synthesis for the collagen, and Magnolia officinalis Bark Extract, for anti-microbial effect. For this reason, such dentifrice with these two components was developed and produced, in order to use for early gingivitis dental patient.

【Materials and Methods】 go adults, volunteers were joined for this clinical experiment to compare the subcidal effect by use of the dentifrice with Centella and Magnolia, with the control dentifrice without the components, for 4 weeks trial, by dividing the subjects with 3 groups as experimental group 1 as use with the dentifrice on the tooth brush, experimental group 2 as use the dentifrice on the gingival by rubbing it with the finger before tooth brushing with the dentifrice, and the control group as tooth brushing with no specific components for anti-septic component.

【Results】 There was no different on PHP, PMA and oral malodor on before and 3 days use otherwise, it revealed the less in 2 weeks and 4 weeks later both in the experimental 1 group and 2, in PMA and oral malodor.

Oral hygiene was the better in experimental group 2 than in experimental group 1 or the control. ($P < 0.05$)

【Conclusion】 These two components were effective for subsiding the gingivitis and oral malodor in clinical.

【Keywords】 gingivitis, Centella Asiatica Extract, Magnolia officinalis Bark Extract, oral hygiene and gingivitis in adults, oral malodor, PHP, PMA

AP-36 The clinical test for gingival subside effect by use of the electric gingival stimulator

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【Objective】 Early stage of gingivitis can be subsided by performing the proper tooth-brushing and the adequate stimulation of the gingival tissue.

So, in this study, it is needed to set evidence for gingival subside for early stage of gingivitis, by use of newly developed electric gingival massager.

【Method】 30 volunteers adults were participated in this clinical study and divided them with 3 groups as 10 persons for each group.

The first group as using the electric stimulator, second group as had simulator group and third group as control as use no any other stimulator group, were prepared and supplied them with the same brand dentifrice and the tooth brush.

Two groups of subjects were performed the stimulation of gingiva with electric of hand typed stimulator for a minute for 2 times a day after tooth-brushing, otherwise only tooth-brushing in control group.

【Result】 CPI(Critical Periodontal Index), BI(Bleeding Index) and PMA(Papillary, Marginal and Attached gingival index at frontal area) were checked and got the good results for subside of early stage of the gingivitis ($P < 0.05$).

【Conclusion】 Two types of gingival stimulators were effective to control the subside early stage of gingivitis in clinical.

【Keywords】 gingivitis, electronic, massage

AP-37 Oral health related-quality of life and halitosis

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【Objectives】 To compare the differences on oral health-related quality of life (OHRQoL) between halitosis patients and non-halitosis patients, and to explore the relationships between halitosis and OHRQoL.

【Methods】 The patients who visited the halitosis clinic and were diagnosed as halitosis were included into case group. The control group consisted of patients without halitosis. All participants were received the assessment of halitosis, clinical oral examinations and questionnaires survey. Assessment of halitosis included volatile sulfur compound measurements with Halimeter, Oral Chroma and organoleptic tests. OHRQoL was measured using Oral Health Impact Profile (OHIP-14, Chinese version).

【Results】 This study included a total of 204 patients (102 in the halitosis group and 102 in the control group). The halitosis group had significantly higher OHIP-14 scores (severity) when compared with control groups (15.7 vs. 7.9, $p < 0.001$). The mean number of the items with negative impact (extent) between halitosis and control group were significantly different (mean \pm SD: 1.8 ± 2.1 vs. 0.3 ± 0.9 , $p < 0.001$). Around 56% of participants in halitosis group reported (prevalence) while 21% reported so in control group ($p < 0.001$). In the multivariable analyses, halitosis group also have significantly higher severity scores, extent scores and prevalence of impact when compared with control group. Among halitosis group, the most commonly reported negative impacts were within the domains of "psychological discomfort" and "psychological disability".

【Conclusion】 OHRQoL among patients with halitosis were significantly poorer than the patients without halitosis. Among patients with halitosis, "psychological discomfort" and "psychological disability" were the domains with the highest negative impacts. Chinese version of OHIP-14 had good reliability and validity in measuring halitosis OHRQoL. Therefore, OHIP-14 appears to be an appropriate tool for regular inquiry used in the dental clinic to survey the impact of halitosis on the functional and psycho-social well-being.

【Keywords】 halitosis, oral health related-quality of life

AP-38 Antimicrobial activity and suppressing halitosis effects of *Prunus mume* extract and some naturals

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【Objectives】 This research was conducted to identify the anti-bacterial activity of *Prunus mume* extract (PME) against oral microorganisms that may cause oral diseases, and to study halitosis suppressing effect by measuring volatile sulfur compounds which can be suppressed when PME and some naturals mixed oral spray is formulated and applied.

【Methods】 PME was extracted with Pectinex Ultra SP-L enzyme and anti-bacterial activity was examined using disc diffusion method. PME, *Zanthoxylum schinifolium*, green tea, mint oil, pine needle, and mix group oral sprays were prepared and each group was applied. H_2S , CH_3SH , $(CH_3)_2S$ were analyzed using Sensor Gas Chromatograph ODSA-P2 (FIS Inc., Hyogo, Japan) to analyze volatile sulfur compounds.

【Results】 The volatile sulfur compounds suppression rates were confirmed to be PME + green tea (91.92%) > PME + mint oil (75.83%) > PME + *Zanthoxylum schinifolium* (72.17%) > PME (59.68%) > PME + mix (54.81%) > PME + pine needle (34.16%) by analysis.

【Conclusions】 Components derived from PME and natural products had the effect of reducing volatile sulfur compounds concentration which indicates that oral sprays with natural products act effectively in improving oral environment, anti-bacterial activity, and eliminating halitosis. Based on this finding, natural products used in this study are expected to be able to apply in improving oral environment and controlling halitosis.

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【Keywords】 *Prunus mume*, halitosis, volatile sulfur compounds

AP-39 The analysis of risk factors of 210 patients complaining of halitosis in Wuhan

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【Objectives】 Halitosis is an oral health status defined as an unpleasant or offensive odor to others that emits from the oral cavity. It is not only a reflex of patient's physical health, but also lead to psychological burden in social activity. The aim of this study was to analyze the risk factors associated with halitosis.

【Methods】 The patients who visited the department of preventive dentistry underwent organoleptic test and volatile sulfur compound (VSC) measurement. The caries, residual crown/root, tongue coating and gingival inflammation status were assessed. Questionnaires were used to obtain information on demographics, oral hygiene practices and dietary habits.

【Results】 There were half males and half females in 210 patients, and the prevalence of halitosis in males was higher than females ($p=0.020$); patients' age ranged from 13 to 71 years (mean \pm s.d.: 32.01 ± 10.55). 65% of patients had halitosis ($OS \geq 2$), the VSC level of 40% patients were higher than 110 ppb. Several factors such as disease accumulated time, rhinitis, the thickness of tongue coating and periodontal conditions were found to be associated with halitosis. Taking sweetmeat, the thickness of tongue coating and residual crown/root were associated with the VSC level.

【Conclusions】 65% of these patients had halitosis and 40% of patients had VSC level higher than 110 ppb. The oral health status had great associations with halitosis and the tongue coating was the most important factor responsible for halitosis.

【Keywords】 halitosis, risk factors, oral health status, tongue coating

AP-40 The effect of *Streptococcus salivarius* K12 against *Prevotella intermedia* on the reduction of oral malodor

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【Objective】 The aim of the study was to observe the anti-microbial activity of *Streptococcus salivarius* K12 against *Prevotella intermedia*, and influencing effect to decrease Volatile Sulfur Compounds.

【Methods】 After *P. intermedia* was cultured with or without *S. salivarius* K12, VSCs were measured by Oral Chroma. In order to analyze the mechanism for malodor control effect, Anti-microbial activity of *S. salivarius* K12 against *P. intermedia* was assessed. After the spent culture medium or whole bacteria of *S. salivarius* K12 was mixed with *P. intermedia*, a amount of VSCs was also checked by use of Oral Chroma.

【Results】 When *S. salivarius* K12 was co-cultured *P. intermedia*, hydrogen sulfide level was decreasing tendency by high concentration of *S. salivarius* K12, and lower than those of single-cultured ($P < 0.05$). Antimicrobial effect was revealed on 70% concentration of *S. salivarius* K12 for *P. intermedia*.

【Conclusion】 *S. salivarius* K12 were considered for decreasing VSCs level originated from *P. intermedia*.

【Keywords】 *Streptococcus salivarius*, oral micro-organism, oral malodor

AP-41 A case report on volatile sulfide compounds changes in breath

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[Objective] This is a case report on the changes of volatile sulfide compounds (VSCs) in human breath with and without food influence.

[Methods] The subject in this case report was a 34 years old physically healthy female. Clinical oral health status including caries and periodontal condition was examined. VSCs level was measured using a Gas Chromatography for hydrogen sulfide, methyl mercaptan and dimethyl sulfide. Measurements were made every hour from 10 am to 4 pm, for a total of 7 times, on two separate days: non-fasting and fasting days. Food, drink, smoking, and oral hygiene practice were not allowed prior to the first morning measurement on non-fasting day. Fasting day followed Islamic fasting practice; no food, drink or smoking was allowed from sunrise to sunset. Tongue coating was observed every hour while resting saliva and bacteria count was assessed once in the morning, and once in the evening.

[Results] The subject had two untreated caries, two teeth with pocket depth of ≥ 4 mm and 4 teeth with bleeding on probing. On non-fasting day, the concentrations of hydrogen sulfide, methyl mercaptan and dimethyl sulfide were higher than the detectable thresholds. All three gases dropped below thresholds after breakfast and remained around thresholds after that despite a slight fluctuation. On fasting day, a similar fluctuation in concentrations was recorded but all exceeded the detectable thresholds all day. Tongue coating was visibly more yellowish at the end of fasting day. Salivary pH was higher on non-fasting day than on fasting day. Bacteria count was lower on non-fasting day than on fasting day.

[Conclusions] Oral malodor was stronger on fasting day than on non-fasting day, and oral malodor was decreased by taking meals. Further cases should be examined to clarify the relationship between VSCs and its associating factors.

[Keywords] VSCs, halitosis, fasting

AP-42 Oral malodor control effect through intake fermented green tea by some micro-organisms

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[Objectives] In order to prove the decreasing effect for oral malodor through intake fermented green tea by some micro-organisms, the clinical test was done.

[Methods] 30 adults for volunteers were selected for the clinical test, to supply 3 kinds of fermented green tea with such components and fermented with the distilled water as control group, with adding *Lactobacillus plantarum* KCCM : 11322, for fermentation as experimental 1 group and with adding *Saccharomyces cerevisiae* KCCM : 11201, for fermentation as experimental 2 group, to let them intake the fermented green tea and checked the amounts of volatile sulfur compound for each subject, before and after tea drinking.

[Results] It revealed 57.03 ± 7.15 bbv on experimental 1 group and 57.57 ± 8.09 bbv on experimental 2 group, otherwise in 62.90 ± 12.62 bbv in control group ($p < 0.05$), after tea drinking, even though there was no significant different with 3 groups in before intake the teas.

[Conclusions] Fermented green tea contained and fermented with such micro-organisms, would effective to decrease the oral malodor in clinical.

[Keywords] malodor, fermented green tea

AP-43 Comparison of *Streptococcus mutans* biofilm formation on dental materials

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【Objective】 The authors had conducted this study for the purpose to compare the adhesion level of *S. mutans* to various oral appliance materials.

【Methods】 Six kinds of materials were used in this study. Bioplast, Sofliner Tough Medium, Duran, Ortho-Jet™, Lucitone 199, Tokuyama Rebase II were selected. *Streptococcus mutans* ATCC 25175 was purchased from American Type Culture Collection and cultured with brain-heart infusion broth. For biofilm formation, *S. mutans* was cultured in BHI broth supplemented 1% sucrose. *S. mutans* was mixed BHI broth including 2% sucrose after cultivation for overnight. And, formation and observation of whole bacteria and *S. mutans* in salivary biofilm on specimens, and measurement of saliva protein on specimen were carried out.

【Results】 The adhesion level of *S. mutans* and whole bacteria is lower in resilient materials than in rigid materials. Sportguard wafer is the lowest adhesion level of *S. mutans* and whole bacteria among the resilient materials. There were no differences of adhesion level of *S. mutans* and whole bacteria among the rigid materials ($P < 0.05$). Saliva protein was more attached on rigid materials than on resilient materials.

【Conclusion】 It was recommended to clean the oral appliance periodically.

【Keywords】 *Streptococcus mutans*, sportguard, oral appliance material

AP-44 Experiment research of antagonistic effects of *Lactobacillus delbrueckii* subsp. bulgaricus and *Streptococcus salivarius* on halitosis pathogens

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【Objective】 To evaluate the possible antagonistic effects of two probiotics *Lactobacillus delbrueckii* subsp. bulgaricus (Lb) and *Streptococcus salivarius* (Ss) on halitosis pathogens *Porphyromonas gingivalis* (Pg) and *Fusobacterium nucleatum* (Fn).

【Methods】 1 ml suspensions of Lb and Ss were mixed with equal volume and concentration of Pg or Fn respectively. All mixtures were cultured under anaerobic conditions at 37°C for 6 h, 12 h, 24 h and 48 h respectively, and 2 ml of each bacteria were used as control. The CFU of each culture at different time was counted and the corresponding pH values were measured with FE20 pH meter. Two probiotic bacterial species Lb, Ss were used to rate the competitive exclusion between probiotics and halitosis pathogens Fn and Pg.

【Results】 The amounts of Fn and Pg cultured with Lb and Ss significantly decreased compared with those cultured alone ($P < 0.05$ or $P < 0.01$). The pH values of mixture culture at 12 h, 24 h and 48 h were lower than those of Fn and Pg culture alone ($P < 0.05$). The competition between probiotics and pathogens depended on the sequence of inoculation. When probiotics were inoculated first or when both species (probiotics and halitosis pathogens) were inoculated simultaneously, Lb and Ss all inhibited Pg.

【Conclusions】 The results demonstrated that Lb and Ss all strongly inhibited the growth of Fn and Pg, especially inhibit the growth of Pg by their metabolites.

【Keywords】 halitosis, probiotics, halitosis pathogens

AP-45 The effect of CPP-ACP with active ingredients wax propolis chewing gum on calcium and phosphate ion release and the formation of *Streptococcus mutans* biofilm on caries-active subjects' saliva

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[Objectives] Dental caries is the most prevalent oral disease in several countries. It is an infectious disease and different types of bacteria are involved in the process. Propolis from *Trigona sp.*, a resinous substance collected by honeybees, has been used to control the oral microbiota. So, the objective of this study was to develop a chewing gum with active ingredients wax propolis-based with Casein Phosphopeptides-Amorphous Calcium Phosphate complex (CPP-ACP). The amount of calcium and phosphate ion released by CPP-ACP was determined to support the remineralization process and the effectiveness of propolis wax in suppressing the mass formation of *Streptococcus mutans* biofilm both in caries-active subjects' saliva.

[Methods] Chewing gum simulation being done *in vitro* to 25 caries-active subjects' saliva sample using five concentrations of chewing gums (0% propolis, 0% CPP-ACP; 0% propolis + CPP-ACP; 2% propolis + CPP-ACP; 4% propolis + CPP-ACP; 6% propolis + CPP-ACP), then tested by using Ion Selective Electrode and Atomic Absorption Spectrophotometer to analyze calcium ion level, Ultraviolet-Visible Spectrophotometer to analyze phosphate ion level, and biofilm assay using crystal violet to analyze the decline in biofilm mass.

[Results] After chewing simulation, calcium and phosphate ion level on saliva + gum eluent increased significantly compare to saliva control, with the highest calcium level released by CPP-ACP + 2% propolis chewing gum. There was insignificant phosphate level change between saliva control and saliva + gum eluent. There was also significant decreased of *Streptococcus mutans* biofilm mass in the saliva + gum eluent, mostly by CPP-ACP chewing gum and CPP-ACP + 6% propolis.

[Conclusion] CPP-ACP-Propolis chewing gum generated the increase of calcium ion level and decreased in *Streptococcus mutans* biofilm mass of caries-active subjects' saliva.

[Keywords] propolis wax, CPP-ACP, *Streptococcus mutans*

AP-46 Antibacterial effects of *Streptococcus salivarius* K12 on oral bacteria

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[Objective] For the purpose of this study is to study the antibacterial effects of probiotics *Streptococcus salivarius* K12 on oral bacteria (*A. actinomycetemcomitans*, *A. naeslundii*, *E. faecalis*, *F. nucleatum*, *P. endodontalis*, *P. gingivalis*, *S. gordonii*, *S. mutans*).

[Methods] The antimicrobial activity of eight oral bacteria and *S. salivarius* K12 tests were performed. *S. salivarius* K12 culture medium and *A. actinomycetemcomitans*, *A. naeslundii*, *E. faecalis*, *F. nucleatum*, *P. endodontalis*, *P. gingivalis*, *S. gordonii*, *S. mutans* culture alone turbid liquid and mixed, and then the incubator at 37 °C in anaerobic conditions and cultured 36 hours. The oral bacteria and *S. salivarius* K12 using a phase contrast microscope, and the state was observed with bacterial contamination, using a spectrophotometer was an antibacterial test.

[Results] *S. salivarius* K12 showed antibacterial effects proportional to the injection amount increase for above certain concentrations on *A. actinomycetemcomitans*, *A. naeslundii*, *E. faecalis*, *P. gingivalis*, *S. Streptococcus mutans*, *S. salivarius* K12 increased the growth of germs in a condition of low concentration of *F. nucleatum*, *P. endodontalis*, but showed antibacterial effects proportional to the injection amount increase for above certain concentrations.

[Conclusion] Based on the experiment results of probiotics *S. salivarius* K12 on the oral bacteria causing oral cavity, *S. salivarius* K12 showed antibiosis against oral bacteria when it remains inside the mouth for above certain concentrations. Accordingly, it is thought that it would be effective to use *S. salivarius* K12 as a clinical method of preventing oral cavity.

[Keywords] *Streptococcus salivarius*, oral micro-organism, oral bacteria

AP-47 Clinical evaluation of class V cavity restored with conventional glass ionomer cement (GIC)

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[Introduction] Restorations of non-carious cervical lesions (NCCLs) and carious cervical lesion are often challenging due to the location of the lesion that may predispose it to microleakage, plaque retention and caries development. Thus, the outcome of the restorations can be unpredictable and may be prone to failure.

[Aim] The study was conducted to evaluate the clinical performances of class V restoration using the conventional GIC.

[Methodology] 42 class V restorations in 14 patients aged between 28 to 70 years old, with a minimal of 1 year of placement were included in the study. The restorations were clinically evaluated based on Modified Ryge/USPHS Criteria by 2 calibrated examiners.

[Results] Retention was 97.1% from the total restorations. All the evaluated criteria are within the acceptable ratings between 92.1% to 100% and an acceptable rating for post-operative sensitivity at 85.3%. Male reported significantly higher tendency for post-operative sensitivity compared to female ($p=0.01$). Based on Spearman's Correlation, it is noted that anatomical form is significantly correlated with retention ($p=0.46$).

[Conclusion] Restoration of cervical lesions with GIC remains relevant and proved to have a predictable and successful outcome.

[Keywords] class V restorations, GIC, clinical performance

AP-48 The effect of milk intake on the dental caries environment

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[Objectives] Milk has been traditionally known to the oral care products in the dental region. Recently, however, this negative perception of the milk is spreading in Korea. This study is to evaluate the effect of milk intake on the dental caries environment after cariogenic foods intake.

[Methods] It is investigated salivary pH, mineral and volatile sulfur compounds (VSCs) concentration as a target parameter for the oral environment analysis. Unstimulated saliva is collected and VSCs concentration is measured before cariogenic foods intake. Thereafter, saliva samples (0.5ml) are collected up to 30 minutes and VSCs concentration measured at 10 minute after cariogenic foods intake. Salivary pH is measured by pH meter and salivary mineral and VSCs concentration are analyzed by chromatography method.

[Results] The salivary pH to decrease after cariogenic food intake as time passed, and water rinse couldn't prevent the pH decreased. Whereas, the pH is rather increased when taken with milk. In the mineral analysis, the concentration of the magnesium and calcium were rapidly increased after milk intake in all cariogenic foods. The VSC analysis results showed that milk intake didn't significantly influenced on the oral halitosis.

[Conclusions] Milk intake was much more effective in preventing of pH decrease and organic acid generation, tooth remineralization compared with water rinse. Moreover milk did not act as a factor to cause bad breath after eating. Therefore, milk intake after eating the cariogenic food is considered as a new alternative oral treatment.

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[Keywords] milk, dental caries, salivary pH

AP-49 Comparative efficacy of two desensitizing treatments for dentin hypersensitivity

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【Objectives】 The aim of this study was to clinically compare the effectiveness of new adhesion-type dentifrice (patch type dentifrice) with the commercialized strip for dentin hypersensitivity (P's Sensi-Stop).

【Methods】 A total of 31 subjects were entered into this study and stratified into two groups. Subjects were instructed to use one designated type product once per a day for 10 minutes during 6 days. Dentin hypersensitivity examinations which included cold test and electrical pulp test were conducted at baseline, first day, three days and six days. The level of customer satisfaction was also investigated.

【Results】 The results of both new adhesion-type dentifrice and the commercialized strip showed a similar pattern at the cold test using ice stick and electrical pulp test. There were no differences between two groups at the statistical analysis ($p>0.05$). Also at the customer satisfaction survey, there were no statistical significances between two groups ($p>0.05$). However, the degree of pain relief and the level of customer satisfaction for new adhesion-type dentifrice were higher than the commercialized strip.

【Conclusions】 It was concluded that new adhesion-type dentifrice (patch type dentifrice) containing 0.09% zinc chloride and the commercialized oxalate strip showed similar efficacy of dentin hypersensitivity.

【Keywords】 hypersensitivity, adhesion-type dentifrice

AP-50 Effects of frequent rinsing with arginine bicarbonate and urea solution on initial enamel lesions *in situ*

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【Objectives】 To investigate the effects of frequent rinsing with arginine bicarbonate and urea solution on initial enamel lesions *in situ*.

【Methods】 Fourteen subjects wore mandibular removable partial dentures comprising bovine enamel blocks with artificial enamel lesions. The experiment included four 4-week rinsing periods preceded and separated by washout periods of 10 days. In each rinsing period, the subjects rinsed after each meal or snack using distilled deionized water or 2% arginine bicarbonate (Arg group), 1% urea (Urea group), or 0.05% sodium fluoride (NaF group) solutions. They wore their dentures all day, and maintained their normal dietary habits. At the end of each period, the specimens were retrieved and assessed for mineralization changes using quantitative light-induced fluorescence (QLF).

【Results】 Compared with those at baseline, the fluorescence loss ($\Delta\Delta F$) values showed a significant ($P<0.01$) decrease after treatment in all groups except the water group ($P>0.05$). Although both the Arg group and the Urea group showed higher $\% \Delta\Delta F$ than that of the water group, the difference was not statistically significant ($P>0.05$), respectively. The $\% \Delta\Delta F$ of the NaF group was significantly higher than either that of the Arg group or Urea group ($P<0.05$). There was no significant difference between Arg group and Urea group ($P>0.05$).

【Conclusion】 Under the conditions of the present study it may be concluded that rinsing with 2% arginine bicarbonate or 1% urea offers no significant remineralizing benefit to enamel lesions over a relatively short time.

【Keywords】 arginine, urea, remineralization

AP-51 Effects of whitening strip with desensitizing primer on tooth color

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【Objectives】 The purpose of this study was to evaluate efficacy of 2.9% hydrogen peroxide (HP) whitening strip with desensitizing agent as a primer.

【Methods】 144 of female subjects (mean age: 21.7) were recruited after informed consent and approved with IRB from Kyungpook National University Hospital. Group 1 is control using placebo strip and primer containing desensitizing agents. Group 2 used 2.9% HP strip + primer which contained desensitizing agents. Group 3 is 2.9% HP strip + primer which contained 2.8% HP. All participants used the strip and primer one and half hours a day for 14 days. ShadeEye-NCC and Vita classical shade guide were used to determine the color changes on baseline, after 1 day, 3 days, 5 days, 7 days and 14 days. Satisfaction after bleaching and irritating symptom during 14 days were collected with self-describing questionnaire. All collected data were analyzed with repeated measure ANOVA and one-way ANOVA using SPSS 20.0 for windows.

【Results】 Brightness (ΔL^*) increased significantly at group 2 and 3 than control after 3 days of experiment. Chroma (Δb^*) started to decreased after 1 day at group 2 and 3 than control. Perceived symptom of irritating was significantly lower at groups using the strip combined with desensitizing primer. Satisfaction after bleaching was higher at experimental groups than control.

【Conclusion】 2.9% HP strip with desensitizing agent as a primer revealed clinically effective enough to bleaching the human enamel even after three days use. It also can reduce the prevalence of gingival irritation.

【Keywords】 2.9% HP, desensitizing agent, whitening strip

AP-52 Preserving tooth structure in smile-makeover patients by using Inman aligner

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【Objectives】 When patients seeking fastest solution to have a beautiful smile with straighter teeth, dentists should consider about not only patients' teeth appearance, but its structure preservation and longterm proper functionality too.

【Methods】 An Inman aligner (IA) is a removable orthodontic appliance with double action Ni-Ti springs, which enables alignment of mild and moderate crowded front teeth in just 4-16 weeks. This appliance, were chosen by 96 patients (Total of 148 cases, Male-11, age 12-57 years), who wanted to improve their smile. Treatments were done at "Digital Dental Office" in Ulaanbaatar, Mongolia. The degree of anterior teeth crowding, spacing was calculated by the "Spacewise" diagnostic calculator and digital caliper before treatment. Inter proximal tooth reductions (IPR) were done by using Flex Diamond strips and SPEE Slen-derizer discs. The midline screw for arch widening was used almost in all upper and some lower cases to reduce IPR and fasten treatment duration.

【Results】 Fifty two of all 96 patients has been treated their both arches' by upper and lower IA (72% of all cases were upper). The duration of upper teeth alignment was around 10-16 weeks, and for lower teeth 4-9 weeks. Eight patients' treatment duration was extended, because some were wearing IA only when were sleeping and/or were omitting of "every 2-3 weeks" treatment appointments. Overall patient compliance was good. Simultaneous teeth whitening and resin bonding were also done.

【Conclusions】 The advantage of using an IA for treating teeth crowding, which are tends to be more crowded and worn by the time, is that: 1) we had fast results, 2) a better functioning dental and periodontal system by making a proper arch distribution, 3) patients' satisfaction based on keeping their own teeth structure and having more pleasant smile, without any braces and veneers.

【Keywords】 fast teeth alignment by Inman aligner, preserving tooth structure, Mongolia

AP-53 Clinical outcome and Diagnodent score comparison in caries diagnosed teeth

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【Objectives】 Decades after we changed our traditional-nomadic food (hard curds, “chewy” meat products) intake into westernized, dental caries became one of the most prevalent chronic diseases among Mongolian children and adolescents. Early detection of caries and appropriate treatment planning for effective dental care is essential before caries reaches cavitation stage. Recently different caries detection tools, such as Diagnodent have been developed for proper diagnosis and treatment planning.

【Methods】 Fifty four patients (Male-31, aged 6-20 years), were randomly selected from patients examined at “Digital Dental Office” Ulaanbaatar, Mongolia. After removal of dental plaque, occlusal surfaces of back teeth with no existing fillings, were examined by one dentist using laser fluorescence (Diagnodent, KaVo). Before, during and after treatment photos of caries diagnosed teeth were taken. Intra-examiner variability was high.

【Results】 Every fissure and pits of total 130 teeth (N=81 molars, N=49 premolars) were checked by laser and all teeth surfaces showed 20-99 score. According to KaVo Diagnodent therapy chart, those teeth showed over 20 units could have restorative treatment. After minimal drilling and opening of enamel surface we clinically diagnosed: 1) Superficial caries in 27 teeth, scores were 21-67; 2) Moderate in 82, scores were 20-99; 3) Deep in 14 teeth and 4) Deep complicated caries in seven teeth, Diagnodent scores showed 24-92.

【Conclusions】 In this clinical study we found that all teeth scored over 20 units were all carious. And Diagnodent could be a reliable diagnostic tool for detection of hidden occlusal caries and be a “simple-easy to use” aid for restorative treatment decision-making in-additively to the conventional caries diagnostic methods. The laser scores, however, were not related to the depth as well as to the width of the cavity and this result was similar to some other studies.

【Keywords】 hidden caries, early detection, Diagnodent, Digital Dental Office, Mongolia

AP-54 Yogurt contained probiotic reduces mutans streptococci in human volunteers

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【Objectives】 The present study evaluated the effect of *Lactobacillus fermentum* SD11, a strain derived from caries free subject, on a number of salivary mutans streptococci (MS) and lactobacilli, and to examine whether the strain could persist in the oral cavity after a short period of consumption. The potential side effect of the probiotic was also observed.

【Methods】 After informed consent, 43 volunteers (mean aged 21.86 ± 0.83 years) were recruited and randomly assigned to either probiotic or control group. Probiotic group received yogurt (100 ml) contained *L. fermentum* SD11, and control group received yogurt (100 ml) contained *Lactobacillus bulgaricus*, a commercial strain, once daily for 4 weeks. Salivary MS and lactobacilli were enumerated using quantitative differential culture at the baseline and then once a week for 4 weeks after the administration period. The persistence of *L. fermentum* SD11 was also investigated using AP-PCR for the DNA-fingerprinting.

【Results】 In this study, salivary MS counts was used as a parameter to indicate whether the probiotic *L. fermentum* SD11 strain could have an effect on the growth of MS. At baseline, the means count of MS of both groups were not statistically significant difference ($P > 0.05$). A statistically significant reduction of MS count was found in the probiotic group compared to baseline ($P < 0.05$), and MS in the probiotic group was significantly lower than the control group ($P < 0.05$). A significant increase of lactobacilli was observed in both probiotic and control groups ($P < 0.05$). A probiotic *L. fermentum* SD11 strain could be detected up to 4 weeks following cessation of dosing. No any side effect was observed in all subjects.

【Conclusion】 This study demonstrates that a short-term daily ingestion of the orally human derived probiotic *L. fermentum* SD11 could reduce the number of salivary MS. Therefore, *L. fermentum* SD11 may have a beneficial effect on prevention of dental caries.

【Keywords】 probiotics, *Lactobacillus fermentum* SD11, mutans streptococci, dental caries

AP-55 Putative periodontopathic bacteria and herpesviruses in pregnant women

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[Objectives] The present case-control study aimed to explore the potential relationship between putative periodontopathic bacteria / herpesviruses and maternal chronic periodontitis by comparing the detection rates of putative periodontopathic bacteria and herpesviruses in the saliva of pregnant women with and without chronic periodontitis, after balancing their socio-demographic background, oral health related behaviors, and salivary estradiol and progesterone levels.

[Methods] Saliva samples were collected from 36 pregnant women with chronic periodontitis (case group) and 36 pregnant women with healthy periodontal status (control group). Six putative periodontopathic bacteria (*Porphyromonas gingivalis* [Pg], *Aggregatibacter actinomycetemcomitans* [Aa], *Fusobacterium nucleatum* [Fn], *Prevotella intermedia* [Pi], *Tannerella forsythia* [Tf], and *Treponema denticola* [Td]) were detected using 16S rDNA-based polymerase chain reaction (PCR). Meanwhile, three herpesviruses (Epstein-Barr virus [EBV], human cytomegalovirus [HCMV], and herpes simplex virus [HSV]) were detected using nested PCR. Enzyme-linked immunosorbent assay (ELISA) was used to detect the salivary estradiol and progesterone levels. Socio-demographic data and oral health related behaviors were collected using a self-completed structured questionnaire.

[Results] The results showed no significant differences in socio-demographic background, oral health related behaviors, and salivary estradiol and progesterone levels between the case group and the control group (all $P>0.05$). The detection rates of Pg, Aa, Fn, Pi, Tf, Td, EBV, HCMV, and HSV were also not significantly different between the two groups (all $P>0.05$), but the coinfection rate of EBV and Pg was significantly higher in the case group than in the control group (OR=3.00, $P=0.028$).

[Conclusions] EBV and Pg coinfection may promote the development of chronic periodontitis among pregnant women. Thus, EBV should be considered as a pathogenetic consortium in future prevention and treatment of maternal chronic periodontitis.

[Keywords] pregnancy, chronic periodontitis, periodontopathic microorganisms

AP-56 Effect probiotic *Lactobacillus paracasei* on mutans streptococci in young children

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[Objectives] Our previous studies revealed that *Lactobacillus paracasei* SD1, a novel probiotic strain, could reduce mutans streptococci (MS) and safe for adult and teen-aged patients. This study examined the effect of *L. paracasei* SD1 on the level of salivary MS in young children. And whether this probiotic strain was safe for using in young children.

[Methods] After informed consent, 124 children with age 1-5 year old were recruited. Children were divided into 2 groups, probiotic and placebo groups, by simple randomized. The probiotic group received milk powder contained *L. paracasei* SD1 and the control group received standard milk-powder once daily for three months. The salivary samples were collected by spatula method and were examined at baseline (T0), 3-month (T3), 4-month (T4) and 6-month (T6) of the study. Caries status was examined at baseline of the study according to the modified of Nyvad's criteria. Side effects and compliance were also recorded.

[Results & Discussion] This study demonstrated that there was no negative side effects following the probiotic *L. paracasei* SD1 intervention in young children group. The baseline MS level was no significant different between 2 groups. A reducing of MS level were higher among children in the probiotic group (51%) compared with 5.8% of subjects in control group at T3. Moreover, the reduction was found in all follow up period.

[Conclusions] Our results indicates that *L. paracasei* SD1 may be a potential probiotic strain for reduction oral MS in young children. It was also showed that *L. paracasei* SD1 was safe enough for use in young children. Therefore, application of probiotic *L. paracasei* SD1 can be a good alternative to control cariogenic pathogen in children.

[Keywords] *Lactobacillus paracasei*, probiotic, mutans streptococci, young children

AP-57 Effect probiotic *Lactobacillus paracasei* on dental caries in young children

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[Objectives] This study were to investigate the effect of probiotic *L. paracasei* SD1 on dental caries development in the young children. And whether there would be any side effects of consuming the probiotic milk.

[Methods] After informed consent, 124 children with age 1-5 year old were recruited. Children were divided into 2 groups, probiotic and control groups, by simple randomized. The probiotic group received milk powder contained *L. paracasei* SD1 and the control group received standard milk-powder once daily for 3 months. Dental caries was examined at T0 and T6 of the study according to the modified of Nyvad's criteria. Side effects and compliance were also recorded.

[Results] This study demonstrated that a new caries increment (Δdt) among children in probiotic group was less than children in control group with means of $\Delta dt = 0.76 \pm 1.29$ and 1.25 ± 1.64 respectively. *L. paracasei* SD1 shown the tendency to reduce the progression of caries (OR=5.25, P=0.282) in the children with low number of dental caries (dt=0-2 teeth) by 5.25 times compared to control group, however there were small subject in this group. There was no any side effects reported for all children.

[Conclusions] This is the first clinical trial of the probiotic *L. paracasei* SD1 for prevention of dental caries in young children. It was shown that dental caries increment in the probiotic group was less than the control group. Therefore, *L. paracasei* SD1 may help to prevent the dental caries and safe enough to use in young children.

[Keywords] probiotics, *Lactobacillus paracasei* SD1, dental caries, young children

AP-58 Clinical features of recurrent aphthous stomatitis and therapeutic effects of "Akhizunber"

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[Purpose] The purpose of the present investigation was to study the prevalence and clinical features of recurrent aphthous stomatitis among population in Ulaanbaatar, and to develop new therapeutic agent for treating oral mucosal ulcer (aphthae), commonly called cancer sore.

[Goals] 1. To prepare herbal preparation "Akhizunber" and investigate its pharmacological effects, 2. To investigate the hystomorphological effects and antimicrobial properties of Akhizunber, 3. To study the prevalence and clinical condition of RAS in population of Ulaanbaatar city, 4. To evaluate the therapeutic effects of Akhizunber in RAS.

[Materials and Methods] Three hundred subjects from each district of Ulaanbaatar, in total 1,800 subjects were randomly selected and enrolled in this study. Among them, 136 subjects were selected by clinical examination. Questionnaires were filled by the subjects, and medical history was recorded.

Oral clinical examination was done to assess local and general condition of RAS. The immunological general tests were made in some cases of RAS. The treatment effects of Akhizunber were evaluated according to the immunological changes in some severe cases. The treatment was assessed by the duration of the cancer sores to heal completely.

[Results and Conclusion] 1. One hundred and thirty six (7.9%) subjects of randomly selected 1,705 people had oral mucosal disorders. Among them, 61 patients (44.9%) were diagnosed with RAS. Clinical features of RAS: Minor recurrent aphthous stomatitis was accounted for 75.4% of all cases of RAS. The diameters of them were 0.3-20mm (0.64 ± 0.269). The healing time of minor aphthous sores treated with Akhizunber was 8.62 ± 3.09 days. The sores healed without scarring. Major recurrent aphthous stomatitis was diagnosed in 16.4% of all cases of RAS. Two to four major aphthous sores covered with necrotic thick mass and diameter of 0.8-1.5cm (1.09 ± 0.25) were observed on the tip of tongue (38.5%). The healing time of these sores treated with the test Akhizunber preparation was 15.3 ± 2.87 days. The sores healed leaving tense scar. The prevalence of herpetiform ulcers were 8.2% of all RAS cases. Multiple minor aphthae coalesced to form large ulcers with the diameter of 1-4cm (1.8 ± 1.3). These ulcers were small, rounded, and painful resembling ulcers of herpes simplex. They were located on the vestibulum neutral plicae, lingual side. The healing time of herpetiform ulcers treated with Akhizunber was 10.3 ± 2.08 days. 2. Akhizunber preparation includes *Bergenia crassifolia* (L) Fritsch, *Achillea asiatica*, *Serg and Juniperus sabina* Pisch. et Mey. Arbutins with Rf of 0.7-0.8 and flavonoids with Rf of 0.8-0.9 were detected by TLC of all plant extracts. Akhizunber contained Ca (32,047mkg/gr), K (24,776 mkg/gr), Mg (3,702 mkg/gr), Si (2,866 mkg/gr), Na (2,817 mkg/gr), P (2,485 mkg/gr), in total 15 macro and microelements. The contents of Hg and Ni were not determined. The final Akhizunber preparation contained arbutin (9.96) and composite flavonoids (2.18). LD50 of Akhizunber was 8.7gr/kg, it expressed low toxicity ($6 < 8.7$ gr/kg) by the classification Sidorov K.K(1973). 3. Akhizunber have had in anti-inflammatory and analgesic effects, and its influence on regeneration of mucosal cells were proved by hystomorphologic studies. Akhizunber exhibited strong growth inhibition activities against *S. aureus* and *C. albicans*. However, Akhizunber showed low antibacterial effects against the growth of *E. coli* and *M. luteus*. 4. The few small aphthae could be effectively treated by oral application of Akhizunber, however in case of major aphthae or multiple aphthae the immunotherapy should be used in combination.

[Keywords] recurrent aphthous stomatitis (RAS), Akhizunber preparation, clinical features of RAS

AP-59 To study oral pathological conditions of oral mucosa among HIV infected individuals in relation to immunologic indicator

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[Introduction] According to the report of World Health Organization (WHO) in 2012, 35.3 million people are living with HIV/AIDS worldwide. The infection of HIV/AIDS more than 1,000,000 is considered to be high-prevalence infectious country which includes North America, South America, Nigeria, India, Russia, and China. For instance 38,000 people are considered to be infected in Irkutsk city of Russia which has a population of 2.9 million. Researchers have noted that among HIV infected individuals, pathologic changes in oral mucosa appear more commonly when CD4 cell count per 1 mm³ drops below 200. According to a study conducted in 2005 in Venezuela, among 75 HIV infected individuals 85% had pathologic changes in oral mucosa including Oral Candidiasis constituted the most common lesion representing a 58% (37/64), followed by Oral Leukoplakia 20% (13/64), Lineal Gingival Eritema 8% (5/64); Aphthous Recurrent Stomatitis 6% (4/64), Herpes Labials' 3%(2/64) and Kaposi's Sarcoma 5% (3/64). Several epidemiologic studies on HIV have been carried out in our country, no clinical studies in particular, studies of oral mucosal changes among HIV infected individuals have not been searched.

[Goal] The goal of this study was to study oral pathological conditions of oral mucosa among HIV infected individuals in relation to immunologic indicator.

[Materials and Methods] Immunologic tests were performed at National Center for Communicable Diseases, AIDS/STI Surveillance and Research Department, and Central Laboratory of NCCD. A total of 50 individuals have been involved in the study by the supervision of NCCD, AIDS/STI Surveillance and Research Department.

[Results] A total of 50 individuals over the age of 20 have been involved in the study. Forty two (84%) were male and 8 (16%) were female. Among all male participants, twenty eight (66.7%) participants identified themselves as men who have sex with men only or homosexuals, 10 (23.8%) as men who have sex with individuals of either gender or bisexuals, and 4 (9.5%) as men who have sex with individuals of opposite gender or heterosexuals. All females were heterosexuals. Following oral conditions were observed among HIV infected individuals: oral candidiasis in 35%, oral herpes 22%, oral leukoplakia 17%, recurrent aphthous stomatitis 13%, necrotizing ulcerative periodontitis 9% and Kaposi's sarcoma in 4% of participants.

When the observed oral conditions were correlated with immunologic status, it was determined that oral pathologic changes appeared at a time of increase in viral load 876,355 and at the average CD4 cell count per 1 mm³ of 222,28 ± 139,8.

[Conclusion]

1. Oral Candidiasis 35%, Oral Herpes 22%, Oral Leukoplakia 17%, Aphthous Recurrent Stomatitis 13%, Necrotizing Ulcerative Periodontitis 9% and Kaposi's Sarcoma in 4% of participants.
2. Oral changes were observed during increase in viral load 876,355 and at average CD4 cell count per 1 mm³ of 222,28 ± 139,8.

[Keywords] HIV, CD4, viral load, oral lesions

AP-60 To assess risk factors associated and determined clinical forms of the oral leukoplakia

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[Introduction] Oral leukoplakia is a white patch on the oral mucosa that represents approximately 85% of all oral precancers. According to the previous studies, patients (17.9%) developed invasive cancer, with a mean malignant transformation period of 5.2 years. The age was associated with oral leukoplakia, with individuals at least 50 years old being 2.7 times more likely to have oral leukoplakia than individuals less than 50 years old. The recent studies have revealed that the risk of the oral leukoplakia is increased about 2.24–8.7 smokers, 2.5–2.9 fold in smokeless tobacco users, 8.3 fold in users of snuff.

In Mongolia, Ts.Norowpil has conducted the research among 115 people who has disease of oral mucosa; 10.4% them had oral leukoplakia and two patients developed cancer. J.Urjinkham's study shows 9.3% of 86 people had oral leukoplakia who were above 45 years old.

Problem statement: During the past decade few studies reported the incidence of oral leukoplakia in our country. However, there has not been a research related to clinical risk factor of this disease in Mongolia.

[Objective] To assess risk factors associated and determined clinical forms of the oral leukoplakia.

[Materials and Methods] This case-control study consists 30 cases with oral leukoplakia and 60 controls. To conduct assessment of oral leukoplakia risk factor through 49 questionnaires composed of 3 groups coupled with oral examination. The questionnaire data will use a program that was custom designe in SPSS 17.0.

[Results] Risk of leukoplakia is increased in smoking (OR=3.923; 95%CI: 1.550–9.933), in alcohol and tobacco combined use (OR=13.333; 95%CI: 2.930–60.669), in continuous using of spicy food (OR=3.245; 95%CI: 1.070–9.841), wrong habits/biting own buccal mucosa and lip (OR=4.261; 95%CI: 1.137–15.965), disease of organ systems (OR=2.591; 95%CI: 1.049–6.402), allergy (OR=3.286; 95%CI: 1.293–8.351), dental cavity or tooth decay (OR=11.769; 95%CI: 3.877–35.724), dental prostheses use (OR=2.667; 95%CI: 1.015–7.008), and in poor oral hygiene (OR=5.786; 95%CI: 1.336–25.065). According to forms, incidence of thin leukoplakia 70%, verrucos leukoplakia 7%, and erosive form is about 23%. The buccal mucosa was the most common site occurring in 50%, right and left buccal mucosa 20%, only right buccal mucosa 17%, only left buccal mucosa 10%, and 3% is in occlusal curve.

[Conclusion] Our study shows the risk factors of leukoplakia are smoking, alcohol and tobacco combined using, continuous using of spicy food, wrong habits/biting own buccal area and lip, disease of organ systems, allergy, dental cavity or tooth decay, dental prostheses use, and poor oral hygiene. Thin leukoplakia is more likely to prevalence in a clinical form. Furthermore, we need to continue this study about risk factors, prevalence and malignant transformation of oral leukoplakia.

[Keywords] oral leukoplakia, risk factor, tobacco, precancer, oral mucosa

AP-61 The study of clinical features of oral candidiasis

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【Purpose】 To study the clinical features of oral candidiasis.

【Objective】 1. To determine the signs and symptoms of oral candidiasis. 2. To determine the clinical features of oral candidiasis.

【Methods】 The study group was comprised of 3 men and 27 women with oral candidiasis which were diagnosed in school of dentistry's survey room and 'Urnuh zam' dental clinic. The information of oral candidiasis was collected through 24 questions composed of 6 groups coupled with oral examination.

【Result】 10% (3) males and 90% (27) females of 30 patients. 20-39 age 6 people surveyed, 13 people aged 40-59, and involved 11 people aged over 60. Indicated from signs and symptoms of oral candidiasis to feel a burning mouth 80% (24), to have dry mouth 83.3% (25), twitching pain 26.7% (8), coating of a tongue 60% (18), halitosis 33.3% (10), fissuring angles of mouth 16.7% (5), diminished mucosal integrity 20% (6), sore mouth 46.7% (14), to itch 16.7% (5) swallowing tongue 16.7% (5), morbidness 70% (21), bitter taste in mouth 33.3% (10), reduced ability to taste 10% (3), erythema of the mouth 53.3% (16). Clinical features is indicated acute pseudomembranous candidiasis (thrush) 10% (3), acute atrophic candidiasis (erythematous) 26% (8), chronic atrophic candidiasis 40% (12), median rhomboid glossitis 6% (2), angular cheilitis 6% (2), hyperplastic candidiasis 10% (3).

【Conclusion】 Detected from oral candidiasis there are signs and symptoms of to have dry mouth 83.3% (25), to feel a burning mouth 80% (24), morbidness 70% (21), coating of a tongue 60% (18).

The indication of clinical features are chronic atrophic candidiasis 40% (12), acute atrophic candidiasis (erythematous) 26% (8), acute pseudomembranous candidiasis (thrush) 10% (3), hyperplastic candidiasis 10% (3), median rhomboid glossitis 6% (2), angular cheilitis 6% (2).

【Keywords】 oral candidiasis, oral mucosa

AP-62 Dental erosion in young adult in Shanghai

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【Objectives】 To describe the prevalence of dental erosion in young adult in Shanghai.

【Methods】 A stratified, cluster, multi-stage random sampling method was applied to young adult in Shanghai in 2013. And clinical examination of dental erosion with BEWE index was carried out. Chi-square test was utilized for statistic analysis.

【Results】 A total of 483 young adult worked as white collar aged from 21 to 30 years old in Shanghai were randomly selected. The prevalence of dental erosion in the sample was 42.9%. The relatively high prevalence of 45.6% was found in female adults, and the relatively low prevalence of 36.3% was in male adults. The prevalence of dental erosion in female was significantly higher than that in male ($P < 0.05$).

The relatively high prevalence of 48.8% was found in less than 25 years old age group, and the relatively low prevalence of 38.8% was in older than 25-30 years old age group. The prevalence of dental erosion in less than 25 years old age group was significantly higher than that in age group which is older than 25-30 years old ($P < 0.05$).

【Conclusions】 The prevalence of dental erosion in young white collar in Shanghai appears not to be lower than that was seen in most of surveys carried out in different parts of the worlds. Efforts should be made to raise public awareness of the disease.

【Keywords】 dental erosion, young adults, oral survey

AP-63 Oral health status and oral health related quality of life (OHRQoL) in Malaysian obese adolescents—The preliminary result

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【Objectives】 A cross-sectional study was to investigate the association of oral health status, oral health related quality of life and obesity among 14 and 16 year old adolescents attending secondary public schools in Selangor.

【Methods】 A self-administered questionnaires containing the short version of the Malaysian Oral Health Impact Profile (OHIP[M]) was distributed to measure subjects OHRQoL. Body Mass Index (BMI)-for-age was used for their anthropometric measurement and Decayed, Missing, Filled teeth (DMFT) was used to screen the dentition; the Simplified Basic Periodontal Examination (BPE) and bleeding on probing (Ainamo et al., 1977) were used to screen periodontal and gingival status.

【Results】 From the total of 400 subjects being screened, only 260 subjects completed questionnaires and all examinations with parents' consent. 37.7% of the adolescents were classified as normal weight, 20.8% as overweight, and 38.8% as obese. The highest prevalence of obesity was recorded in male which was 38.1% and 31.5% were from Malay ethnic. The prevalence of dental caries in obese adolescents was 17.0% and it is similar to normal weight which was 16.7%. The mean DMFT score, BPE code and gingival status were 1.38(SD=2.12), 1.49(SD=0.68), and 0.90(SD=0.29) respectively. Overall, the functional limitation and psychological discomfort recorded the highest impact as sometimes and at least once in a while for physical pain for both obese and normal weight group.

【Conclusions】 Our study demonstrated no significant association between dental caries, periodontal disease and impact on oral health of obese adolescents.

【Keywords】 Malaysia, obese adolescents, oral health status, OHRQoL, OHIP (M)

AP-64 Effectiveness of Silver-diamine-fluoride in arresting caries in heart disease children

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【Objectives】 Caries management in children with congenital heart disease (CHD) is always a challenge task for dentists, particularly in Thailand, where the young have high caries risk. Arresting caries may prevent odontogenic infection, condition that becomes threatening in these children. This study aimed to compare effectiveness of two fluoride reagents in arresting caries and reducing salivary bacteria in CHD children.

【Methods】 A randomized controlled trial was conducted among 60 CHD children, aged 18 months - 6 years who had at least one primary tooth with active dentin carious lesion. Following baseline examination and saliva collection, children were randomly received A) 38 % Silver diamine fluoride solution (SDF) or B) 5% Sodium fluoride varnish (NaF). Saliva was re-collected 30 minutes after application. Follow-up examinations and saliva collection were carried out 3 months later. Caries arresting was determined by changing of color and hardness as compared to those at baseline.

【Results】 Mean arrested surfaces in SDF group at 3 months was 5.21, which were statistically significant more than those in the NaF group (0.19) ($p < 0.001$). At 30 minutes post-application, colony counts of Mutans streptococci and Lactobacilli were significantly reduced in SDF group ($p < 0.001$) as compared to baseline. However, no significant reduction was seen in those of the NaF group. At 3 months, there was no statistical difference in reduction of bacteria counts in both groups.

【Conclusions】 Results showed that when examined at 3 months, single application of SDF could effectively arrest more surfaces of dentin caries than those applied with NaF. Applying SDF also reduced salivary bacteria at 30 minutes post-application but had no significant effect at 3 months. Although a longer clinical follow-up is required, SDF application may be a practical interim caries management in medically compromised patients.

【Keywords】 arrested caries, Silver-diamine-fluoride, randomized controlled trial

AP-65 The oral health of Chinese children with disabilities

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【Objectives】 The aim of the study was to evaluate oral health conditions in disabled Chinese children living in urban area.

【Methods】 The subjects were 1,379 3-18 years old disabled children (deaf, dumb, blind, physically handicapped, mental handicapped, intellectual disability) from 10 Chinese provinces. The children were selected from several institutions, kindergartens and schools which take care of disabled persons. Caries and periodontal status (bleeding and calculus) were examined. A soft package for social statistics version 19.0 (SPSS19.0) was used to do the analysis. T-test, chi-square test and one-way ANOVA test were performed to analyze the differences of oral health status.

【Results】 The average dmft and prevalence of 0-5 and 6-12 years old disabled children were 1.48, 1.13 and 30.6%, 26.5%. The ratio of ft were only 0%, 0.91% in this two age groups. 0-5 years old children with physically disability, 6-12 years old children with mental and intellectual disability had higher dmft and caries prevalence respectively (5.9, 60% and 1.28, 33.6%). The average DMFT and prevalence of 6-12 and 13-18 years old disabled children were 1.09, 2.06 and 39.2%, 50.9%. The ratio of FT were only 1.31%, 5.46% in this two age groups. 6-12 years old children with blind, 13-18 years old children with blind and physically disability had higher DMFT and caries prevalence respectively (1.64, 55.7%, 2.09, 65.4% and 1.37, 65.6%). The prevalence of bleeding of the three age groups were 13.5%, 24.67%, 42.12%, and calculus were 5.48%, 22.06%, 47.5%.

【Conclusions】 In conclusion, the results revealed significantly poor level of oral hygiene and high level of caries prevalence in disabled children, showing the need to reorganize preventive care measurements and improve dental care in these children, especially for the children with physically, mental, intellectual disabilities and blind.

【Keywords】 disabled children, caries, periodontal status

AP-66 The efficacy of nano hydroxyapatite fluoride dentifrice for artificial caries by QLF

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【Objective】 To evaluate the efficacy of different concentration of fluoride dentifrice with or without nano hydroxyapatite (HA)for artificial caries by quantitative light-induced fluorescence (QLF) .

【Method】 60 tooth pieces with a round enamel surface were subjected to 5 groups (A. 5,000ppm fluoride dentifrice, B. 5,000ppm fluoride dentifrice with nanoHA, C. 1,100ppm fluoride dentifrice, D. 1,100ppm fluoride dentifrice with nanoHA, E. PH cycling, control group).A baseline, QLF measurement was performed. The samples were subjected to a demineralizing solution for 40 hours to create an artificial caries lesions. A second QLF measurement was done to quantify the extents of surface demineralization. The samples with the artificial caries lesions were then treated with 5 groups of experimental agents respectively for 10 minutes 3 times daily followed by a demineralization period in a pH cycling regime for 10 days. A final QLF measurement was took the third time. ANOVO paired t-test was used to compare the ΔF , ΔQ values between groups before and after dentifrice Tx.

【Results】 Significant difference of ΔF , ΔQ values were observed among the groups A, C and B,D,E after treatment of dentifrice ($p < 0.05$), indicates that remineralization occurred following dentifrice Tx, But There was no statistically significant difference between groups of B,D,E. ($p > 0.05$).

【Conclusion】 High concentration (5,000ppm) of fluoride are the most effective in remineralization in shortterm period, nano hydroxyapatite may increase the formation of the CaF_2 rapidly on the surface layer but can help to resistance to the further remineralization of the leision.

【Keywords】 fluoride, artificial caries, remineralization, QLF, nano HAP

AP-67 The closing and the remineralization effect of the dentinal tubule by use of Sensodyne dentifrice

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【Objectives】 In order to find the evidence for desensitization effect of Sensodyne dentifrice, *in vitro* test for closing and the remineralization effect of the dentinal tubule was performed.

【Methods】 Is extracted teeth were selected and divided with 4 sections to expose the dentinal tubule and polished. Classified with 4 groups as negative control, Sensodyne Original dentifrice, Sensodyne Fresh dentifrice, Perio dentifrice as positive group, were prepared, and use each dentifrice to apply each specimen by performing tooth brushing with the automatic tooth brushing unit for 150g weight force for 5,000 times movements.

Micro hardness test was done to compare the dentinal hardness changes with each group and observe the surface of specimen with scanning electronic microscope ($\times 5,000$) to find the exposure or closure of the dentinal tubules, in order to compare each other. The area of the closure was measured by use of the image scanning and analysis program.

【Results】 Micro hardness was the highest in the group with Sensodyne Original dentifrice, and the Sensodyne Fresh dentifrice, second, and there was different on the micro hardness and the closing effect of the dentinal tubules. Between at Sensodyne brand dentifrice and the control group.

【Conclusions】 Sensodyne brand dentifrice is effective for decreasing the hypersensitivity might.

【Keywords】 remineralization, dentinal tubule, hypersensitivity

AP-68 Stain on dentin after silver diammine fluoride and potassium iodide

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【Objective】 To compare the appearance of dentin until one month after application of silver diammine fluoride (SDF) solution to that of dentin after application of SDF solution followed by potassium iodide (KI) solution.

【Methods】 Rectangular dentin blocks from root trunks of extracted permanent molars were cut into four blocks each. All blocks were coated with acid resistant nail varnish except one flat surface window of similar size. A number of 4 dentin blocks were prepared from the same tooth and they were allocated into four different groups randomly. Gp1- Artificial caries lesions ($\approx 200\mu\text{m}$ deep) created (BHI broth, multi-species cariogenic bacteria, 10 days)+SDF; Gp2-Artificial caries lesion created+SDF+KI; Gp3- immersed in sterilized BHI broth (10 days)+SDF; Gp4- immersed in sterilized BHI broth (10 days)+SDF+KI. Colors of the exposed dentin surface window at baseline and 0, 3, 24, 96, 168 hours, as well as 1 month after intervention were recorded using PANTONE color sheets and was coded into 1-Light yellow (PANTONE code: 12-0704-TPX/11-0907-TPX); 2-Yellow (1205U/7401U); 3-Light brown/Greyish (4635U/402U); 4-Dark brown/Black (4625U/BlackU) for comparison.

【Results】 All dentin blocks (each group $n=20$) had similar color at baseline (coded 1). Color of dentin surface windows receiving SDF application alone was darker than that of dentin surface windows receiving SDF and KI application ($p<0.001$), while lesion or sound status of the dentin surfaces did not significantly affect the staining effect of the agent ($p>0.05$). The darkening effect on the dentin surface windows increased with time ($p<0.001$).

【Conclusions】 The blackening effect of topical application of SDF solution on dentin surfaces can be reduced by an immediate application of KI solution following it, although the darkening effect increased with time.

【Keywords】 silver diammine fluoride, potassium iodide, black stain

AP-69 The effects of commercial red ginseng beverage on bovine enamel surface

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[Objectives] This study was conducted to investigate the influence of several red ginseng beverages sold in the market on healthy teeth surface and to confirm the anti-erosion effect of added calcium.

[Methods] For experimental group selection, Red ginseng beverages with the lowest pH (A; group with pH 2.98), mid-level pH (B; group with pH 3.61), the highest pH (C; group with pH 5.34) and the lowest pH +1% calcium (D; group with pH 2.98 +1% Ca) were experimental group. Jeju Samdasoo and Coca Cola were used as the negative and positive control groups. The surface micro-hardness (VHN) and the surface roughness (Ra) of each sample were measured at before and after 30minutes treatment.

[Results] Difference in the surface micro-hardness (Δ VHN) of teeth after 30 minutes of soaking in each beverage was the highest in the positive control group (60.99 ± 8.99), followed by A (41.63 ± 8.96), B (30.64 ± 8.21), and the negative control group (-4.48 ± 7.29) ($p < 0.05$). No significant difference was observed in C (-18.79 ± 10.11) and D (-16.40 ± 7.89). Surface roughness (Ra) exhibited significant differences between each group ($p < 0.05$). Surface roughness (Ra) was high in A (102.88 ± 26.34) and B (67.76 ± 39.89), as well as in the positive control group (101.21 ± 39.59). In contrast, C (30.80 ± 28.49) and D (25.05 ± 10.79) showed similarly low surface roughness values as the negative control group (23.77 ± 22.48).

[Conclusion] Putting the above mentioned results together, red ginseng beverages with low pH were shown to erode the surface of the teeth. When calcium was added to the red ginseng beverages, a decrease in tooth erosion was observed. Therefore, the possibility of tooth erosion should be considered when drinking red ginseng beverages; furthermore, an addition of calcium to red ginseng beverages can be an alternative solution to suppress tooth erosion.

[Keywords] dental erosion, calcium, red ginseng beverage

AP-70 Analysis of CPP-ACP complex + Ethanollic Propolis Extract gel effectivity to enamel remineralization

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[Objectives] Dental caries is the highest incidence of oral disease in the world, many research have been focused in prevention activities. According to principles of MID (Minimum Intervention Dentistry), one of strategy to manage caries is regeneration using remineralization agent. Since a decade, CPP-ACP (Casein Phosphopeptide-Amorph Calcium Phosphate) complex have already known as remineralization agent. In this study, the combination between CPP-ACP complex and Ethanollic Propolis Extract (EPE) in gel formulation have been made. EPE was added as an antimicrobial agent. The aim of this study to analyze the effectivity of CPP-ACP Complex + EPE in gel formulation to enamel remineralization.

[Methods] A 3×5 mm window on the enamel surface of 18 caries free extracted human premolars was demineralized using phosphoric acid. The specimen were divided into 6 groups : control, CPP-ACP complex, EPE, CPP-ACP complex + EPE 2%, 4% and 6%. The gel were applied 5 minutes for 26 times. Microhardness test were performed at baseline, after demineralization and after gel application. The surface microstructure and element analysis was evaluated using SEM + EDS.

[Result] The microhardness data were tested using Kruskal-Wallis showed no statistically significant difference between each group after gel application ($p > 0.05$). Even though, CPP-ACP complex + EEP 2 and 4% group showed increasing microhardness number and CPP-ACP complex + EPE 6% showed decreasing microhardness number. There were also no statistically significant difference microhardness number between demineralization and after gel application using Wilcoxon ($p > 0.05$). Electromicrograph showed a smooth film at CPP-ACP complex + Ethanollic Propolis Extract group. The quantitative element analysis showed no differences in any of the groups.

[Conclusions] The combination between CPP-ACP complex and EPE in gel formulation may have a potential on enamel remineralization and provide a smooth film at enamel surface.

[Keywords] CPP-ACP complex, Ethanollic Propolis Extract, CPP-ACP complex + EPE gel

AP-71 The impact of chewing ability on cognitive function of rural elderly people in Korea

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【Objectives】 The aim of this study is a direct effect of chewing ability on cognitive function and to mediate the activity daily living (ADL) to evaluate the indirect effect.

【Methods】 The study subject was 295 patients who home helped service in rural area, Korea (70 years or older). The data were collected by means of cognitive function (MMSE-DS), ADL questionnaire and a chewing ability was a clinical examination. The structural equation model (SEM) statistical analysis was performed using the AMOS 18.0 (SPSS Inc., Chicago, IL, USA). it based on the overall goodness of model fits such as χ , GFI, AGFI, CFI, RMR, RMSEA, TLI, and NFI.

【Results】 Subjects with good chewing ability had significantly better cognitive function, activity daily living ($p < 0.001$). The results of SEM was significant relationships were found between chewing ability and MMSE-DS, ADL. The mediating effect of activity daily living and nutrition assessment was significant between chewing ability and cognitive function. Various fit indices were within acceptable limits.

【Conclusions】 Chewing ability has been identified that an important factor influencing the cognitive functions of elderly people. It is more important because it directly or indirectly effects. The efforts to maintain the chewing ability is necessary for the prevention of cognitive impairment.

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