K. 6/115 amended

Managing tooth decay situation in preschool children

through community engagement, prevention and caries arrest treatment with silver diamine fluoride

Prof. ECM Lo

Team member: Prof. CH Chu, Dr. D. Duangthip

Faculty of Dentistry
The University of Hong Kong

Summary of the impact

- The HKU Faculty of Dentistry researchers have developed oral health programme to manage tooth decay in preschool children through community engagement, prevention and caries arrest treatment with silver diamine fluoride.

- Since 2010, more than 150,000 children (18,000 children/year) have benefitted from the programme.
- Direct health impact: reduction of children with tooth decay (from 43% in 2010 to 35% in 2016) and most (70%) of the treated caries become arrested

- A new clinical guideline on using SDF was developed by the American Academy of Pediatric Dentistry in 2017.

Background and underpinning research

Findings of the Hong Kong Oral Health Survey 2011:

- Half of the 5-year-old children suffered from tooth decay.
- Over 90% of their decayed teeth were left untreated.

- 75% of them had never visited a dentist.
- No improvement compared to the previous survey in 2001.

(Department of Health, 2013)

This calls for action and strategy to improve the oral health of preschool children.

Innovativeness & knowledge exchange

- In the early 2000s, the HKU Faculty of Dentistry pioneered in conducting clinical research on silver diamine fluoride (SDF)
  (Lo et al. 2001, Chu et al. 2002, Tan et al. 2010)

- Based on the good results, SDF has been used for dental caries control in kindergarten children in Hong Kong
  (Zhi et al. 2012, Duangthip et al. 2016, Fung et al. 2017, Duangthip et al. 2017)

Significance of the research

SDF application is an effective alternative to fill and drill treatment of carious cavities.

Active caries lesions
(yellow or light brown)

Application of SDF
(non-invasive)

Arrested caries lesions
(dark brown or black)

Academic impacts

❖ SDF treatment for caries control has been recognized locally and internationally

❖ External grants

- 2 Research Grants Council (GRF)
- 1 Health Care and Promotion Fund
- 1 S.K. Yee Medical Foundation
- 1 Health and Health services Research Fund

IADR Cariology Research Group Research Group Science Award winner, Dr. Chu Chun Hung and Dr. Duangporn Duangthip receive plaque from the IADR Cariology Research Group President Marcelle Nascimento.

❖ > 30 papers on promoting oral health in kindergarten children in scientific journals

❖ 3 prestigious international research excellent awards

Oral health programme in H.K. kindergartens in 2010-2018

1. Oral examination and arresting tooth decay with application of silver diamine fluoride (SDF) solution

2. Oral health education for children, parents and kindergarten teachers

Engagement

Partnership and collaboration have been established with
a dental product company and
approximately 200 kindergartens organized by various NGOs

Colgate

東華三院
Tung Wah Group of Hospitals

保良局
PO LEUNG KUK

HKFYG

香港基督教服務處
HONG KONG CHRISTIAN SERVICE

聖雅各福群會
St. James' Settlement

中華基督教會香港區會
The Hong Kong Council of the Church of Christ in China

香港浸信會聯會
The Baptist Convention of Hong Kong

香港路德會
The Lutheran Church Hong Kong Synod

香港聖公會
HONG KONG SHENG KUNG HUI
The Hong Kong Anglican Church (Episcopal)

Engagement

仁濟醫院
Yan Chai Hospital

世佛會幼兒學校
W.F.B. NURSERY SCHOOL

Impact achieved

Reaching a large number of children, parents and teachers

- around 200 kindergartens every year
- > 150,000 preschool children have benefitted from this program

Great improvement in the children's oral health

- reduction in prevalence of caries (43% in 2010 ; 35% in 2016)
- high caries arrest rate (70%)

Engagement and impact achieved

>500 kindergarten teachers participated in oral health seminars and lectures during 2012-2017.

Engagement and impact achieved

Oral health education for children

Oral health education for parents

Details of the impact

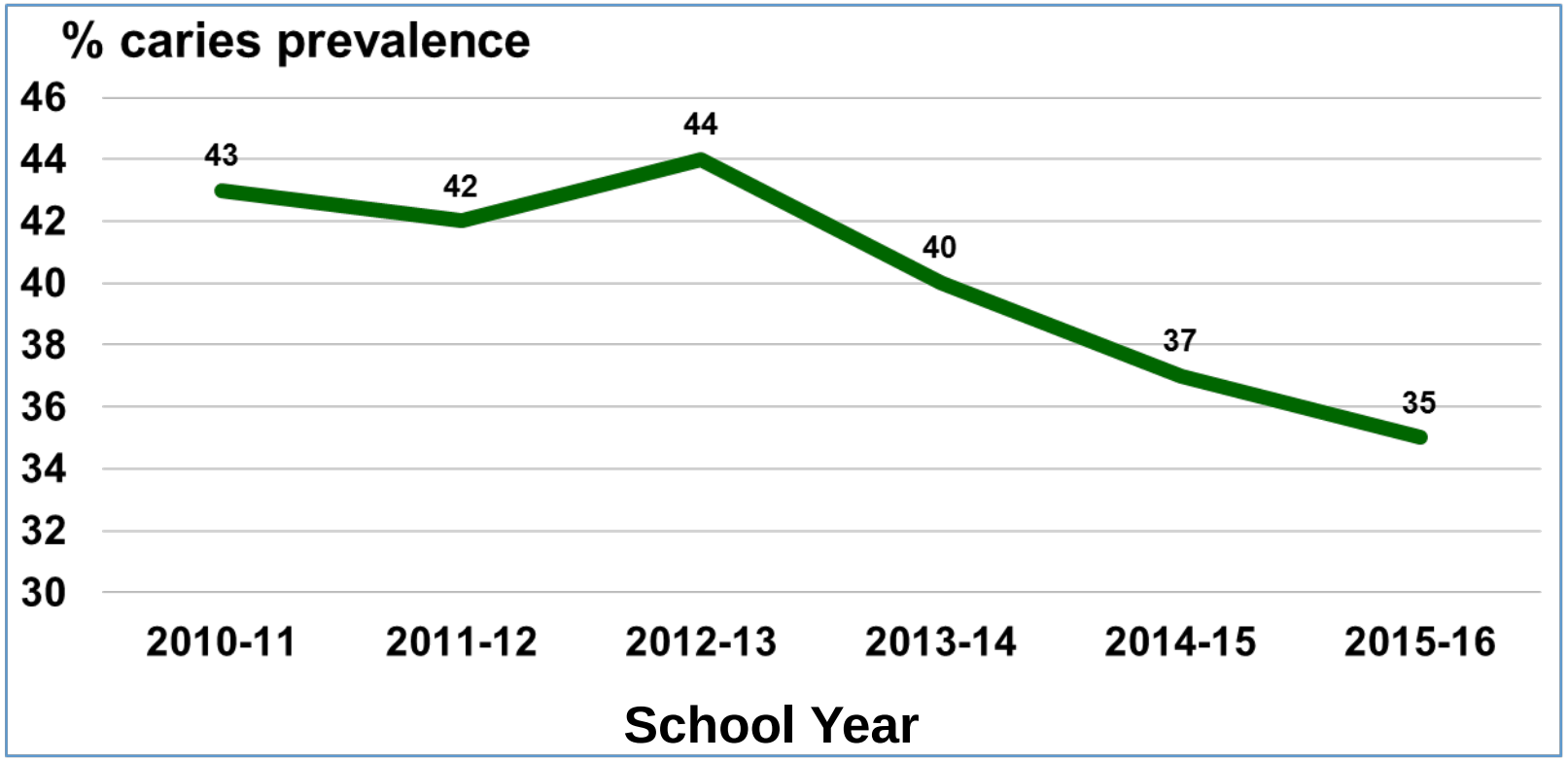
Reaching a large number of children, parents and teachers

Summary of the impact	Total
Average no. of children examined/ year	18,000
Average no. of children received SDF/ year	5,800
Average no. decayed teeth treated with SDF/ year	23,500
Total no. of children received dental check-up and OHE	126,000
Total no. of children received OHE only	40,000
Total no. of children received SDF treatment	40,000
Total no. of decayed teeth treated with SDF	164,000

SDF= silver diamine fluoride
OHE = oral health education and received free toothbrush and toothpaste

Impact achieved

Preventive effect: a significant reduction in proportion of kindergarten children with dental caries



Impact achieved

Treatment Effect

- High success rate - 70% of active caries become arrested after application of 38% SDF solution (Fung et al. 2017).

- 4,060 children/year saved from toothache and infection.
  (5,800 children with caries treated by SDF x 70% success rate)

- HK$8.2 million/year saving in oral health service
  (cost of a dental filling $500 x 23,500 SDF-treated teeth x 70%)

Programme evaluation

>80 % of parents accepted SDF treatment and gave consent for their children.

<5% of the children were uncooperative during the treatment.

Questionnaires : response rates >80%

	2012-13	2013-14	2014-15	2015-16	2016-17
Overall satisfaction	99%	99%	98%	98%	98%
The program was helpful in improving children' s oral health	96%	97%	97%	99%	95%
The program helped promoting oral health awareness	99%	93%	97%	98%	95%

Focus group interviews with teachers:

"Since having dentist come to our school, the parents are more aware and do brush their child's teeth with the given souvenir toothbrush, also ticked the brushing chart."

Engagement and impact achieved

Mass media reported the oral health programme for preschool children and use of silver diamine fluoride to arrest tooth decay.

無綫新聞

首頁 頭版 快訊 視頻 兩岸 國際 財經 體育 法庭 天氣 專題節

2016-10-31

醫療：港大證明1種溶液可止蛀牙 獲美採用

香港大學牙醫學院一項研究證明在蛀牙位置塗上一種溶液，可有效停止蛀牙，研究成果更獲美國業界採用。

這種「氟化氨銀」溶液，含有銀離子及氟離子，塗上蛀牙位置可抑制細菌及增加礦物質，令牙面變硬，停止蛀牙情況。港大牙醫學院從2001年起至今年發表20多份相關研究報告，並與約200間幼稚園合作，為未有牙科保健的幼童免費治療蛀牙。

LOCAL NEWS

WWW.STHEADLINE.COM
MON 27 | 07 | 2015

頭條日報

比率較美日等地偏高

港幼童每五人兩蛀牙

不少家長以為幼童乳齒很快脫落，故忽略為幼年子女護齒。香港大學牙醫學院一項研究發現，本地幼稚園學童蛀牙率偏高，平均每五名幼童中，便有兩名有蛀牙問題，高於其他地區。專家指出，忽視蛀牙或會導致嚴重的系統性感染，家長應留意子女口腔健康。 本報記者

港大牙醫學院進行的「香港幼稚園兒童牙科外展服務項目」，於一四／一五學年為約二萬三千名幼稚園學童檢查口腔及牙齒，當中發現三成七有蛀牙問題，即五名幼童中便有兩名有蛀牙，平均每名幼童有一點五隻蛀牙。

港大牙醫學院牙科公共衞生講座教授盧展民指，數字較去年的四成一略為下跌，反映本港幼童蛀牙情況有所改善，但仍較外地如美國的兩成三及日本的一成八為高，他表示，幼兒普遍怕痛而抗拒接受牙科檢查，家長亦忽視為子女護齒。

他續指，不治療乳齒蛀牙會惡化產生牙髓，不只影響恆齒生長，更會引起牙痛及腫腮，或導致嚴重的系統性感染，提醒家長必需注意子女口腔健康。

港大牙醫學院牙科公共衞生講座教授盧展民指，反映本港幼童蛀牙情況有所改善。

Engagement and impact achieved

Sâu răng sữa sớm: Mối nguy hiểm cha mẹ không hề biết

Hình: TS. Duangchit Duangpom (Khoa Nha, Đại học Hồng Kông) báo cáo về tình trạng Sâu răng sữa tại Hội nghị Khoa học Kỹ thuật răng hàm mặt lần thứ 38 (HN KHKT RHM 38)

2015.7.27 MON

A28 am HEALTH

嚴重者幾乎廿隻全蛀

四成幼童有蛀牙

Dental checks at nurseries prompt warning

About two out of five kindergarten children have cavities, with kids in Sham Shui Po, Wong Tai Sin and North District having the worst dental health in the territory, the University of Hong Kong has found.

HKU dentistry faculty's outreach program conducted checkups on 23,000 kindergarten children during the 2014-15 academic year, finding each child had 1.5 decayed teeth on average.

The overall prevalence rate of dental cavities in young children is 37 percent in Hong Kong, which is double that of Japan. Prevalence rates in the United States are 23 percent and in Britain 28 percent.

However, the local rate has steadily decreased in the past two years, dropping from 44 percent in 2012-13 and 41 percent in 2013-14.

The number of decayed teeth on average has dropped from 1.6 to 1.5 per child.

Chair professor Edward Lo Chin-man said conducting more checkups would increase awareness among parents about the importance of dental health.

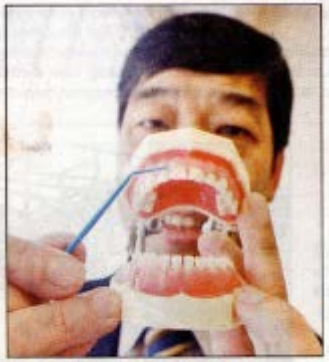
"Some parents may have the misconception that primary teeth with dental cavities do not need treatment as they will soon fall off to be replaced by permanent teeth," Lo said.

The data showed the prevalence rate of pre-schoolers with cavities was 45 percent in Sham Shui Po, 41 percent in Wong Tai Sin and 44 percent in North District.

"Families in these districts may have lower affordability and lower educational level to access dental services," Lo said.

He estimated that more than 90 percent of preschoolers have never visited a dentist.

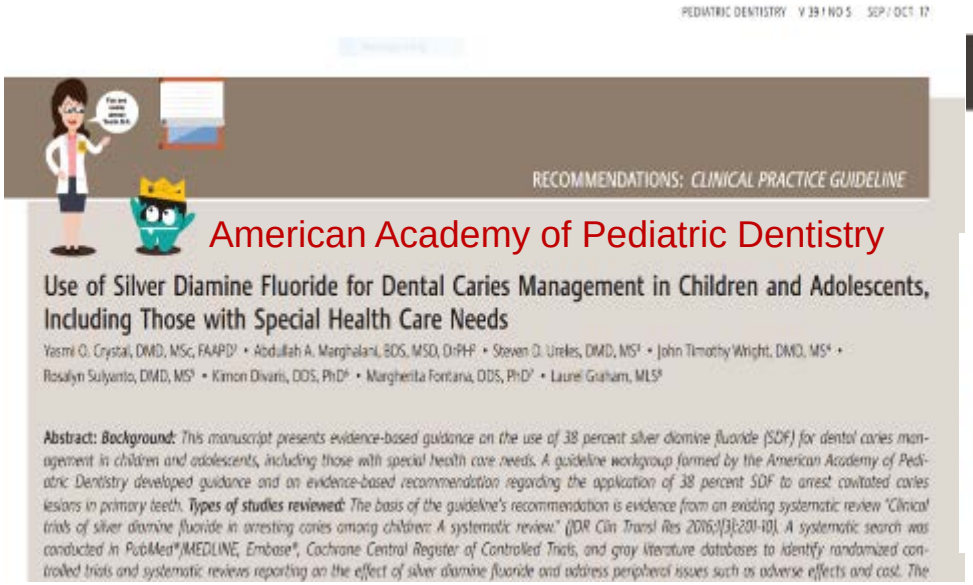
HARRY NG



Edward Lo puts on a brave face as he says more checkups would raise parents' awareness. SCMP

Impact on oral health policies and guidelines

- Based on our research findings, a clinical guideline on use of SDF was developed by the American Academy of Pediatric Dentistry in 2017.
- The basis of this new guideline comes mainly from our published research findings in a systematic review (JDR Clin Transl Res 2016;1:201-10).



SDF is considered as a breakthrough dental agent in treating tooth decay.
(Horst 2018)

Acknowledgement