



Promoting child oral health and managing tooth decay in preschool children

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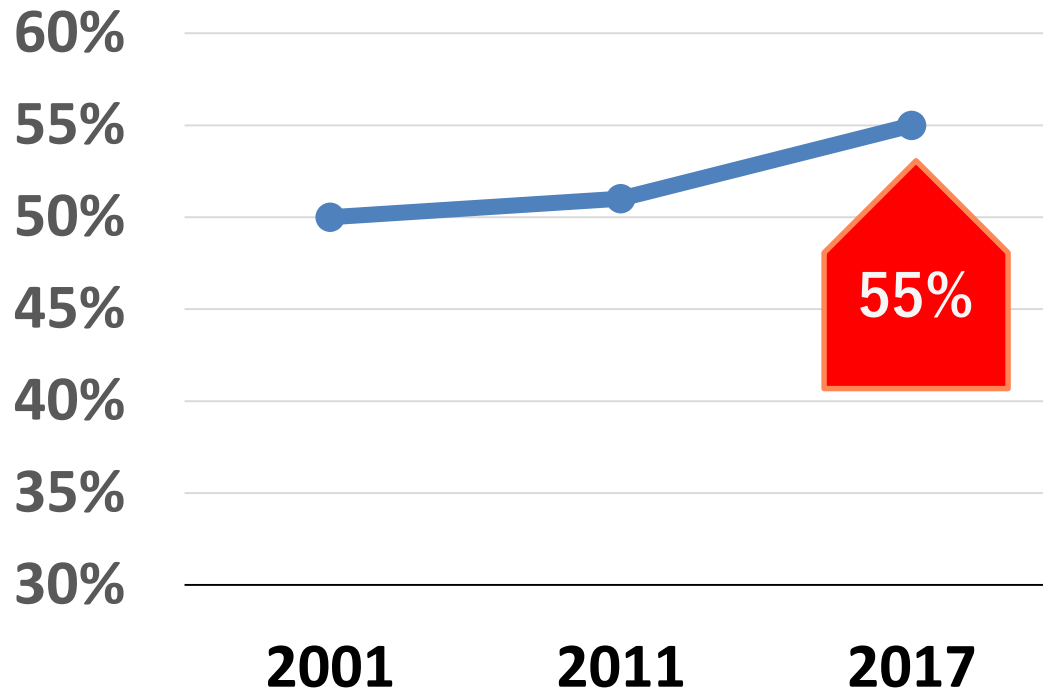
Date of Submission 2 June 2021

Summary of the Impact

- We have established **the territory-wide oral health programme to promote child oral health and manage tooth decay situation in preschool children using silver diamine fluoride (SDF) for caries control** to demonstrate how HKU dental research was translated into practice to benefit communities.
- **More than 229,000 children have benefitted from the program.**
- **Direct health impact: reduction of tooth decay (43% to 34%) and caries arrest (70%)**
- **A new clinical guideline of using SDF by American Academy of Pediatric Dentistry was developed.**

Underpinning Research

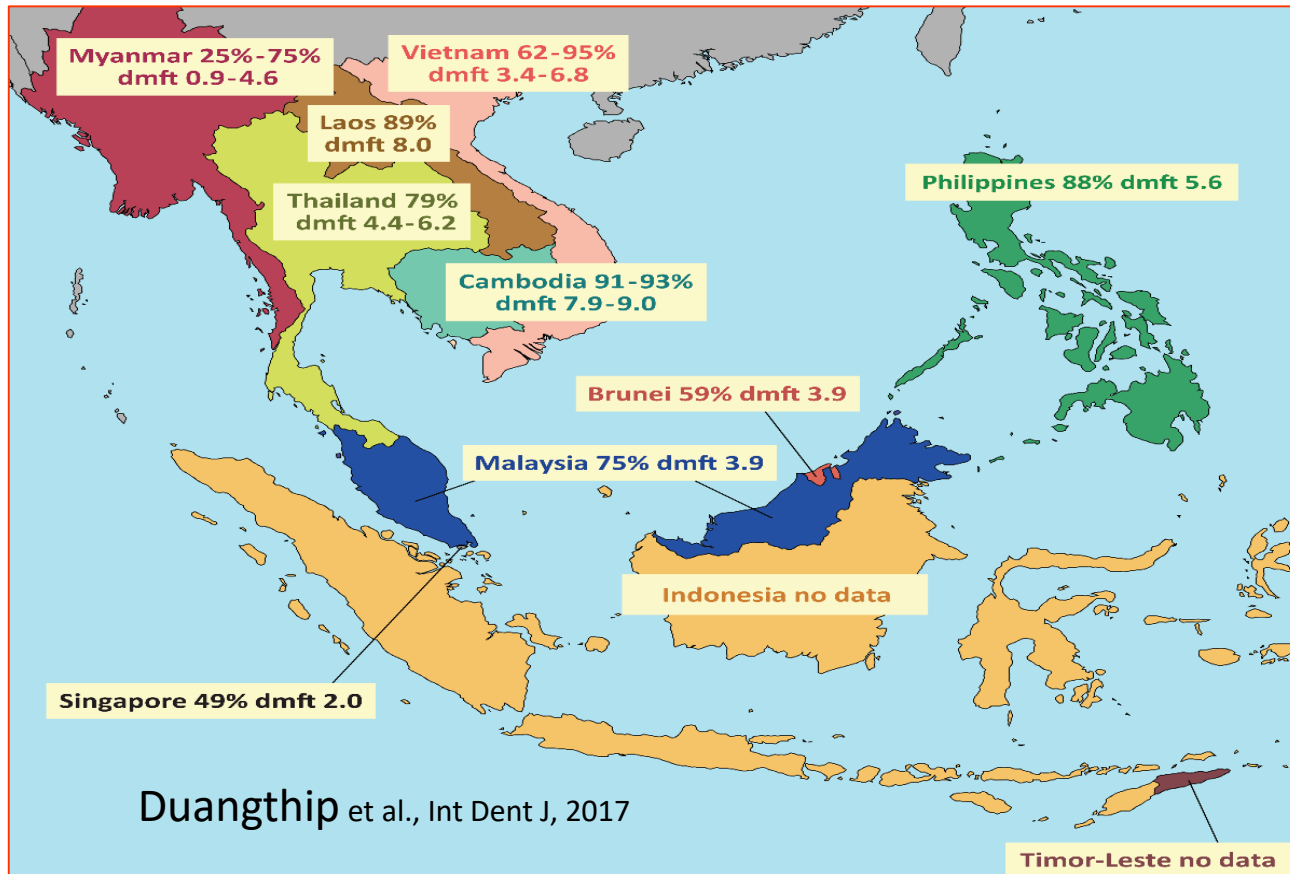
Prevalence of dental caries in 5-year-old children in Hong Kong



- **Over 90% of tooth decay were left untreated.**
- **75% of 5-year-old children never visited a dentist.**
- **No improvement compared to the previous survey in 2001**

(Department of Health, 2011, Duangthip et al. 2019)

Early childhood caries in ASEAN



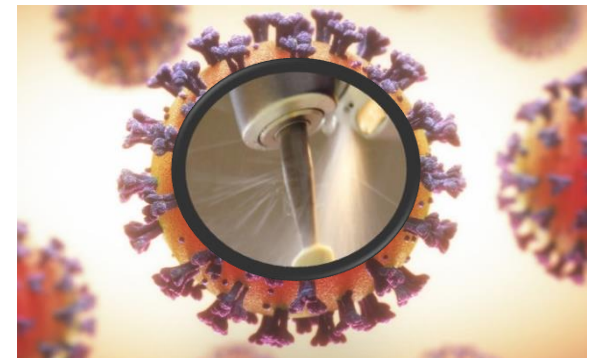
79%!!

dmft 5.1

This calls for action and strategy to address the inequalities in child oral health.

Challenges of Restorative Approach in Young Children?

- Limited access to dental care
- Patients with special needs
- High cost of treatment
- Uncooperative behaviours
- Non-aerosol generating procedures



Silver Diamine Fluoride (SDF)

- Topical fluoride agent, an aqueous solution of silver fluoride stabilized by forming metal complex with ammonia
- Unlike other topical fluorides, SDF is capable of both **preventing new caries** and **arresting active cavitated** caries.
- Effectiveness: caries arrest 81% (Gao et al. 2016)
- No caries removal is required (Chu et al. 2002)
- No major adverse effects (Duangthip et al. 2018)



Innovativeness

SDF: a game changer:



Yellow or light brown
active caries



SDF application in a school-
based setting



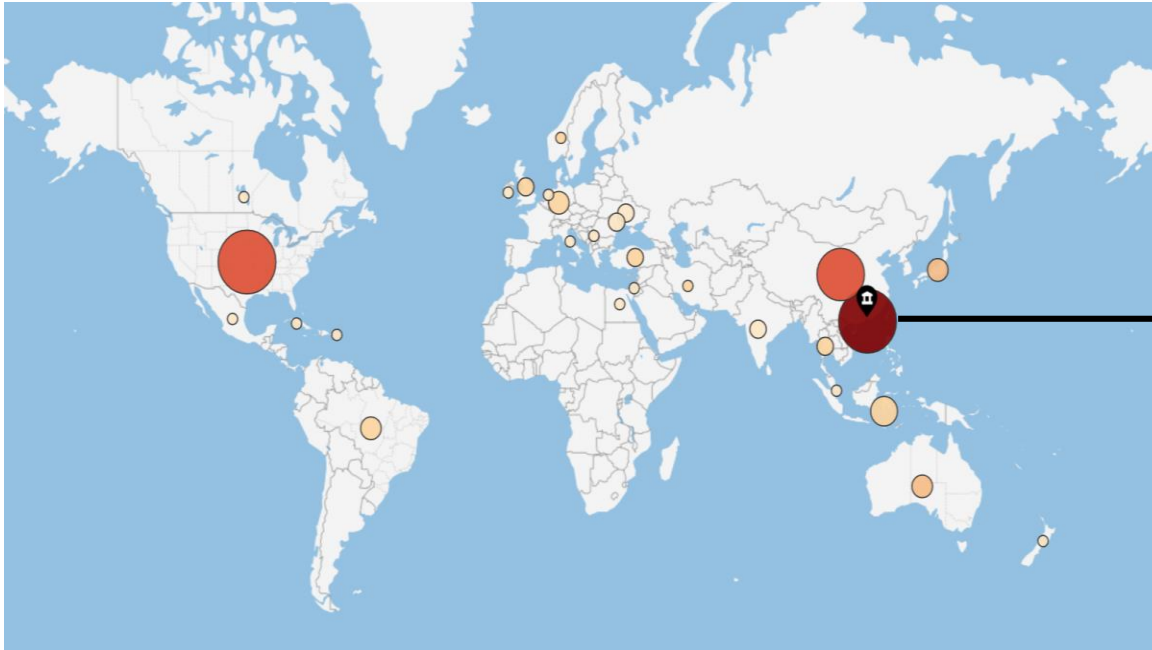
Dark brown or black
arrested caries

- ✓ High success rate
- ✓ Affordable cost
- ✓ Control of pain & infection
- ✓ Simplicity of treatment

Minimally Invasive Approach with SDF

Academic impacts

- ❖ > 10 External grants related to SDF
- ❖ > 70 related papers about SDF
- ❖ >10 prestige international research awards



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.

HKU has provided the **highest number of publications** and **citations** of SDF research in the world.

Oral Health Program in kindergartens using SDF since 2010

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



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



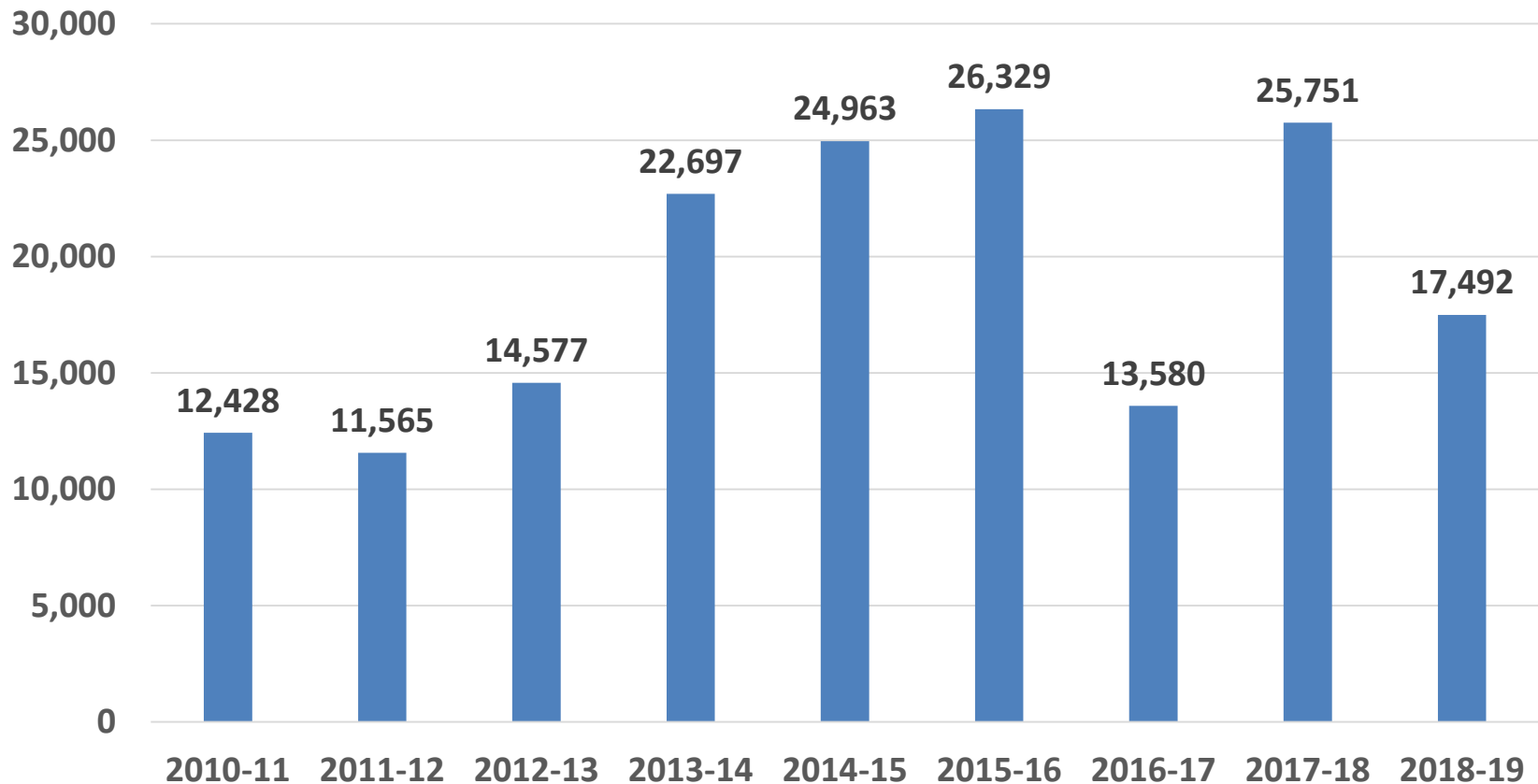
Engagement



Engagement with 200 schools in various NGOs (2010-2019)

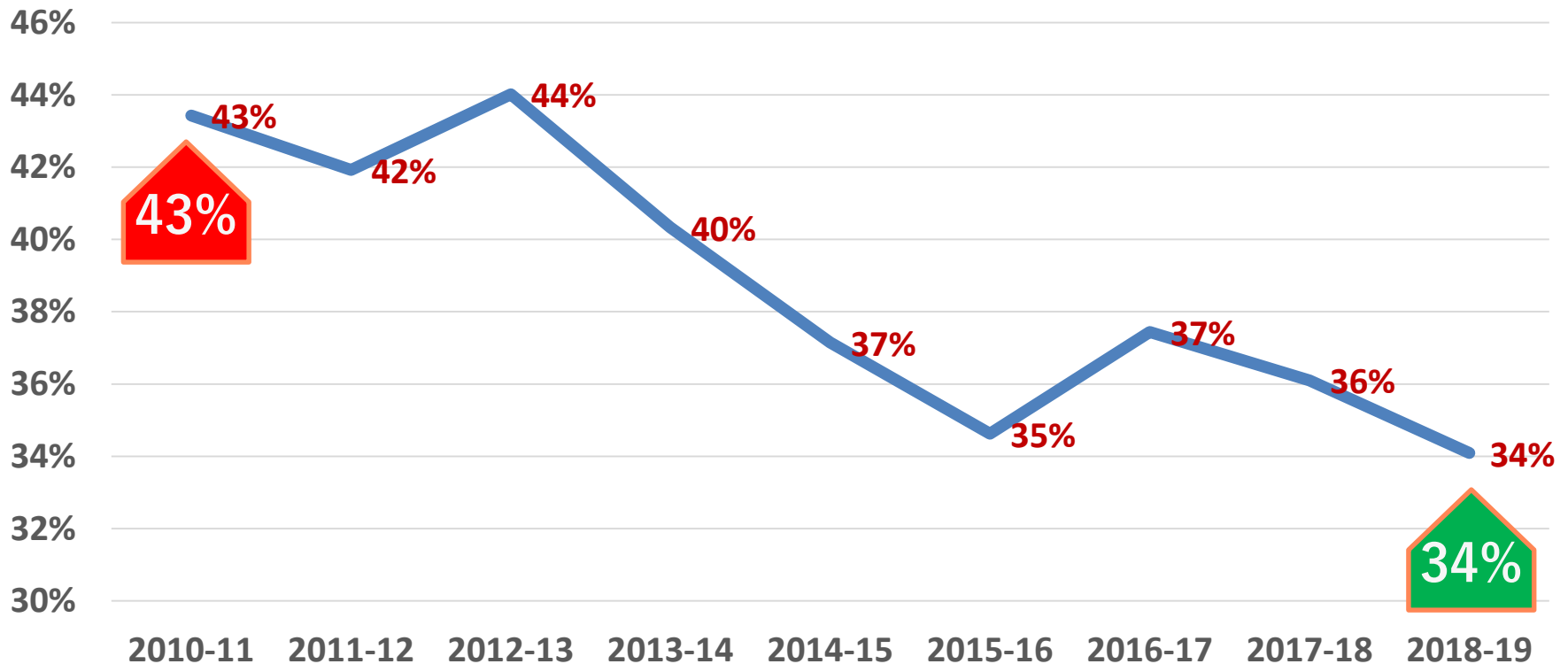


No. of children receiving dental check-ups



- Approximately 19,000 children received dental check-ups yearly.
85% of the participating children accepted SDF treatment.

Direct impact on child's oral health: caries reduction



Program evaluation

❑ >95% children were cooperative for check up and SDF treatment

❑ > 90% of the schools/parents were satisfied

	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Overall satisfaction	99%	99%	98%	98%	98%	99%	99%
The program was helpful in improving children's oral health	96%	97%	97%	99%	95%	97%	99%

"Parents are thankful for the project as they cannot afford the dental treatment to fix their children's teeth. "



"Actually some parents never took them to dentists until receiving the reports of warning. They will start considering to bring their child to see a dentist."

Engagement with schools and teachers



Kindergarten teachers participated in oral health seminars and lectures

Jockey Club Children Oral Health Project (JCCOHP)



Jockey Club
Children Oral Health Project
賽馬會幼童健齒計劃

Organised by



HKU Dentistry
Faculty of Dentistry - The University of Hong Kong
香港大學牙醫學院

Funded by



香港賽馬會慈善信託基金
The Hong Kong Jockey Club Charities Trust

About Us

List of Partnering Schools

Joining Us

Useful Links

FAQ

Enquiries



- Currently, the ongoing territory-wide project has successfully collaborated with more than 700 kindergartens.
- More than 50,000 children, 6,000 parents and 3,000 teachers have participated in JCCOHP.

Please visit <https://www.jccohp.hku.hk/?lang=en>

Engagement and impact achieved

賽馬會推健齒計劃 為幼稚園學童提供免費牙科檢查

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HEALTH

家長往往忽視幼童換牙前的乳齒健康，有調查顯示，近四成本港幼稚園學童有蛀牙問題，嚴重者幾乎20隻乳齒全部有蛀牙。香港大學牙醫學院研究顯示，在學童等待換新牙期間，氟化銀(SDF)溶液能有效制止學前幼童蛀牙惡化。

港大牙醫醫院為早前2.3萬名幼稚園學童檢查牙齒，發現接近40%兒童有蛀牙，即每5名便有2人有蛀牙，其中約兩成學童口腔有八成蛀牙。與世界其他地區相比，香港幼稚園學童蛀牙患病率偏高，美國有蛀牙的2至5歲兒童為23%，英國為28%，而同為亞洲地區的日本為18%。

該學院牙科公共衛生講座教授盧展民指出，幼稚園學童蛀牙患病率高，與家長的意識

不足有關，近九成學前兒童沒有見過牙醫；他又指，如家長能督促子女刷牙，培養子女保持良好的飲食習慣，並定期到牙醫診所檢查牙齒，蛀牙是可完全避免。

港大牙醫醫院社區及家庭牙醫臨床副教授朱振雄表示，蛀牙會惡化蔓延到牙髓，引起學童發燒、牙痛、發腫，甚至影響之後的恆齒生長，應及早診斷幼兒蛀牙和及早治療。

該學院早前通過臨床試驗，發現氟化銀(SDF)溶液能有效、無痛楚地控制幼童蛀牙

【杏林在線】幼童護齒法則

2021年2月19日 19:40



嚴重者幾乎廿隻全蛀 四成幼童有蛀牙

情況，只需塗在蛀牙表面便能硬化蛀牙。不過，他指出，氟化銀雖然會使蛀牙部分變黑，但可後期美化，有少數人會出現牙肉變白等類似敏感的反應，但一般在48小時內會自然恢復。

朱振雄建議，家長可帶子女到牙醫診所治療，根據蛀牙程度接受一年一次或一年多次的密集式治療。而學童與成人一樣，每天應使用含氟牙膏刷牙兩次，盡量減少攝取糖分及零食，以預防蛀牙。



Impacts on child psychology: Low dental fear and anxiety

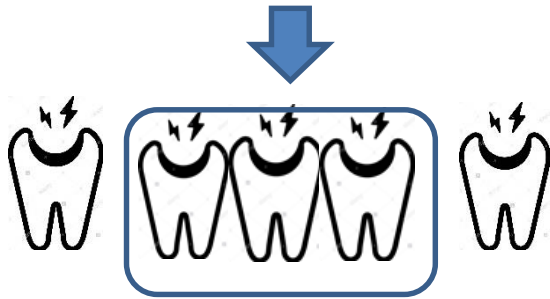
- Children felt happy before and after treatment (80% and 83% respectively)
- 96% of the children had positive behaviours (Yon et al. 2020).



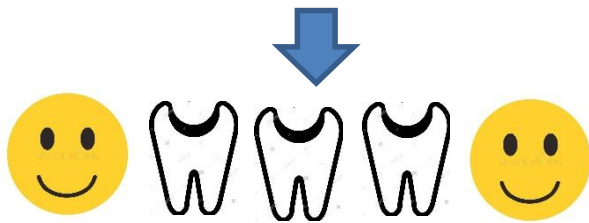
Estimated impacts on health economics



180,000 preschool children X 80% participation rate
= **144,000 participating children**



144,000 children x 40% prevalence = **58,000 children**
58,000 x 3 decayed teeth/child = **173,000 cavities**



173,000 treated cavities x 70% success = **121,000 arrested caries**



121,000 cavities x 1000 hkd (treatment cost)

\$121 M Direct benefits/year

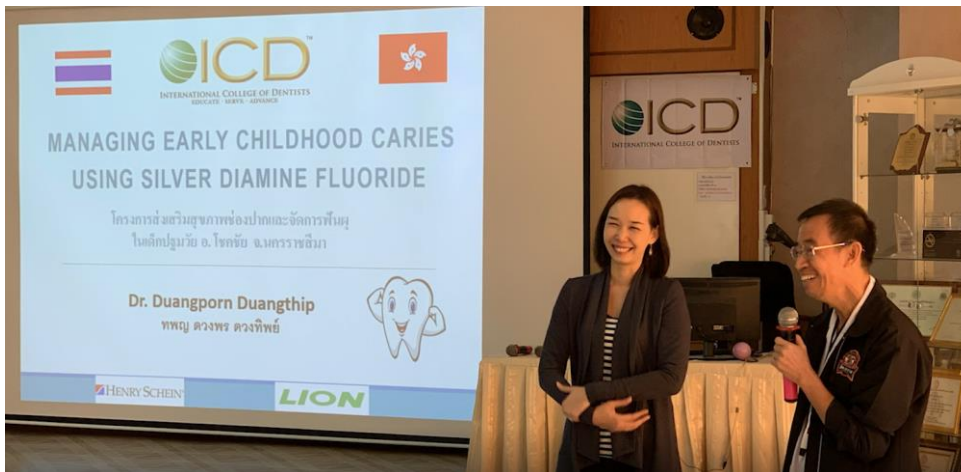
- \$19 M Project cost/year

\$102 M Net benefits/year

Impact beyond Hong Kong



Meeting with Chief Dental Officer and FDA in Thailand for SDF approval,
22 February 2017, Thammasat University, Thailand



Empowering local dental practitioners in Thailand to use SDF for caries control in 2019

ICD Humanitarian Project using SDF for caries control in Thailand 2019



Impact on oral health policies and guidelines

- A new clinical guideline of SDF was developed based on our research findings by American Academy of Pediatric Dentistry in 2017.
- The basis of this new guidelines' recommendation is evidence from our research findings (JDR Clin Transl Res 2016;1[3]:201-10).

PEDIATRIC DENTISTRY V 39 / NO 5 SEP / OCT 17

ADA News

American Academy of Pediatric Dentistry.

RECOMMENDATIONS: CLINICAL PRACTICE GUIDELINE

Use of Silver Diamine Fluoride for Dental Caries Management in Children and Adolescents, Including Those with Special Health Care Needs

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Abstract: Background: This manuscript presents evidence-based guidance on the use of 38 percent silver diamine fluoride (SDF) for dental caries management in children and adolescents, including those with special health care needs. A guideline workgroup formed by the American Academy of Pediatric Dentistry developed guidance and an evidence-based recommendation regarding the application of 38 percent SDF to arrest cavitated caries lesions in primary teeth. **Types of studies reviewed:** The basis of the guideline's recommendation is evidence from an existing systematic review "Clinical trials of silver diamine fluoride in arresting caries among children: A systematic review." (JDR Clin Transl Res 2016;1[3]:201-10). A systematic search was conducted in PubMed®/MEDLINE, Embase®, Cochrane Central Register of Controlled Trials, and gray literature databases to identify randomized controlled trials and systematic reviews reporting on the effect of silver diamine fluoride and address peripheral issues such as adverse effects and cost. The

ADA News

ADA supports silver diamine fluoride for caries management

October 26, 2020

Science in the News

New Guideline Addresses the Use of Silver Diamine Fluoride in Pediatric and Special-Needs Patients

October 13, 2017

SDF is considered as a breakthrough dental agent in treating tooth decay.