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.
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

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

https://decisionsindentistry.com/article/transmission-precautions-for-dental-aerosols/
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:

- High success rate
- Control of pain & infection
- Affordable cost
- 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

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)
• Approximate 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

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<td>Overall satisfaction</td>
<td>99%</td>
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<td>The program was helpful in improving children’s oral health</td>
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“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)

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
賽馬會推健齒計劃 為幼稚園學童提供免費牙科檢查

【杏林在線】幼童護齒法則

2021年2月19日 19:40
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).

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