Preventing Dental Caries for Hong Kong Kindergarten Children

26th September, 2012

Knowledge Exchange Lunch Seminar

CH CHU, ECM LO, XL GAO, AMH CHAU, IDI WU, EM JIANG, MHT FUNG

Faculty of Dentistry
The University of Hong Kong

Tomorrow’s Dentistry ...... Today
Preventing Dental Decay for Kindergarten Children

Hong Kong is a metropolitan city with water fluoridation
Preventing Dental Decay for Kindergarten Children

School Dental Care Service SDCS

not covering preschool children
Oral Health Education Unit

Aims at promoting oral health to the public through educational and promotional activities.

- Organising oral health education activities.
- Supplying or lending oral health education resources to the public. The resources include posters, leaflets, booklets, exhibits, slides, videos, and games etc.
- 24-hour Oral Health Education Hotline service.
- "Brighter Smile Playland" visitation programmes.
- Maintaining homepage. Tooth Club
Early Childhood Caries (ECC)

- 51% of 5-year-old children suffered from ECC
- over 90% found ECC were left untreated

*Department of Health, 2002*
Early Childhood Caries (ECC)

Poor dentition significantly affects children's nutrition, the growth and development and general health.

http://facdent.hku.hk
Early Childhood Caries (ECC)

ECC causes pain and infection
Advanced dental caries will progress into the tooth pulp and form dental abscesses

http://facdent.hku.hk
Early Childhood Caries (ECC)

6% of preschoolers suffered from dental abscess associated with extensive decay

http://facdent.hku.hk
For Want of a Dentist

By Mary Otto
Washington Post Staff Writer
Wednesday, February 28, 2007

Twelve-year-old Deamonte Driver died of a toothache Sunday.

A routine, $80 tooth extraction might have saved him.

If his mother had been insured.

If his family had not lost its Medicaid.

Deamonte Driver, sitting next to his mother, Alyce, shows the scars from incisions for his brain surgery. (By Linda Davidson -- The Washington Post)
Dental care service utilization

Utilization of dental care service of preschoolers was low, 72% of them had never visited a dentist

Department of Health, 2002

http://facdent.hku.hk
Oral Health Awareness

Table 2 Dental caries experience of preschool children according to their household income, parents’ education level, dental knowledge and attitudes

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Group</th>
<th>N (%)</th>
<th>Mean dmft (SD)</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monthly household income ($HK)</td>
<td>&lt; 10,000</td>
<td>108 (18%)</td>
<td>2.7 (3.7)</td>
<td>P &lt; 0.001</td>
</tr>
<tr>
<td></td>
<td>10,001–15,000</td>
<td>126 (21%)</td>
<td>1.7 (3.0)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15,001–20,000</td>
<td>75 (12%)</td>
<td>1.7 (2.5)</td>
<td></td>
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<tr>
<td></td>
<td>20,001–25,000</td>
<td>56 (9%)</td>
<td>1.2 (2.9)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt; 25,000</td>
<td>248 (40%)</td>
<td>0.9 (2.1)</td>
<td></td>
</tr>
<tr>
<td>Father’s education level</td>
<td>Primary or below</td>
<td>87 (15%)</td>
<td>2.1 (3.1)</td>
<td>P &lt; 0.005</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>332 (57%)</td>
<td>1.6 (2.8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-secondary</td>
<td>166 (28%)</td>
<td>1.0 (2.4)</td>
<td></td>
</tr>
<tr>
<td>Mother’s education level</td>
<td>Primary or below</td>
<td>110 (19%)</td>
<td>2.1 (3.0)</td>
<td>P &lt; 0.005</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>366 (63%)</td>
<td>1.4 (2.8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-secondary</td>
<td>107 (18%)</td>
<td>0.8 (2.0)</td>
<td></td>
</tr>
<tr>
<td>Parents’ dental knowledge</td>
<td>Poor</td>
<td>181 (27%)</td>
<td>2.2 (3.5)</td>
<td>P &lt; 0.005</td>
</tr>
<tr>
<td></td>
<td>Moderate</td>
<td>290 (44%)</td>
<td>1.5 (2.8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Good</td>
<td>187 (29%)</td>
<td>1.0 (2.1)</td>
<td></td>
</tr>
<tr>
<td>Response to child’s toothache</td>
<td>Visit a dentist</td>
<td>543 (86%)</td>
<td>1.3 (2.5)</td>
<td>P &lt; 0.005</td>
</tr>
<tr>
<td></td>
<td>Give pain-killer</td>
<td>22 (3%)</td>
<td>2.6 (3.3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Give herbal medicine</td>
<td>36 (6%)</td>
<td>2.7 (2.8)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>29 (5%)</td>
<td>2.3 (4.7)</td>
<td></td>
</tr>
</tbody>
</table>
Oral health education (OHE)

Epidemiological study:

Poor dental knowledge & awareness amongst HK preschoolers with ECC

Kindergarten teachers can be trained to provide oral health education to them

http://facdent.hku.hk
Silver diamine fluoride application

Simple, Scalable, Sustainable Care
Young or difficult to manage kid
Those cannot afford conventional dental care
Silver diamine fluoride application

Hardened or Slow down ECC
No significant complication
Receive care from SDCS in future
Silver diamine fluoride application

Effectiveness of silver diamine fluoride and sodium fluoride varnish in arresting dentine caries

submitted by Chu Chun Hung

for the degree of Doctor of Philosophy
at the University of Hong Kong
in May 2003
Objectives

- To work with a NGO to set up a dental service for prevention and control of ECC among preschool children.

- To transfer knowledge and skills to the NGO so that it can sustain the dental service.

http://facdent.hku.hk
Outreach dental service for kindergarten children

- Received support from a seed funding scheme of Health Care & Promotion Fund in 2008
- Launched in 2009
- Served a total of 19 kindergartens
Methods

The University of Hong Kong – The Faculty of Dentistry

- Teachers Training
- Teaching materials (Tooth model, CD-Rom, Book and Poster)

Teachers

Regular oral health Education to students (Content and style can be decided by schools themselves)

Students
Pathway

HKU’s Dental Faculty

Kindergarten teachers
(Provided with training, directions and teaching materials)

Kindergarten K3 students
(Educated depending on the needs of individual kindergartens)
Expansion of service

- Post-service evaluation showed positive response amongst kindergartens

- S K Yee Medical Fund granted >$1,000,000 to serve more children in need in future

http://facdent.hku.hk
Hong Kong Christian Service (HKCS)

- A non-profit-making organisation serving the community
- We shared experiences to HKCS and expected them to sustain the service in future
Other NGOs partnerships

- Tung Wah Group of Hospitals (TWGH)
- The Baptist Convention Hong Kong (BCHK)
- The Lutheran Church Hong Kong (LCHK)
- Hong Kong Ling Liang Church (HKLLC)
- Po Leung Kuk (PLK)
- Hong Kong Federation of Youth Groups (HFKYG)
100 selected kindergartens

- Outreach dental services provided to children
- Oral health seminars provided to teachers
Support from industry

Dental models, Posters, Teacher manual, Video CD, Stickers, Leaflets
Oral Health Education Workshop

Equip teachers with knowledge and skills in ECC prevention

More than 1,000 teachers directly or indirectly benefited

Also provided teaching aids to help trained teachers indirectly deliver oral health message and knowledge of ECC prevention to preschool children
## Profile of survey respondents

<table>
<thead>
<tr>
<th>Respondent position</th>
<th>No. of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal</td>
<td>27 (34%)</td>
</tr>
<tr>
<td>Vice-principal / Panel</td>
<td>46 (57%)</td>
</tr>
<tr>
<td>Teacher</td>
<td>7 (9%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>80 (100%)</strong></td>
</tr>
</tbody>
</table>
## Advancement of Knowledge

<table>
<thead>
<tr>
<th>Knowledge Advancement</th>
<th>No. of pre-schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely no</td>
<td>0</td>
</tr>
<tr>
<td>Just a little</td>
<td>0</td>
</tr>
<tr>
<td>Some</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Quite a lot</td>
<td>36 (45%)</td>
</tr>
<tr>
<td>Very much</td>
<td>43 (54%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>80 (100%)</strong></td>
</tr>
</tbody>
</table>

http://facdent.hku.hk
# Raised awareness

<table>
<thead>
<tr>
<th>Raised awareness</th>
<th>No. of pre-schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Absolutely no</td>
<td>0</td>
</tr>
<tr>
<td>Just a little</td>
<td>0</td>
</tr>
<tr>
<td>Some</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Quite a lot</td>
<td>28 (35%)</td>
</tr>
<tr>
<td>Very much</td>
<td>51 (64%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>80 (100%)</strong></td>
</tr>
</tbody>
</table>

http://facdent.hku.hk
Examination

- Children with parental consent were clinically examined by dentist in kindergarten
- A written report was given to the parent
Treatment

- Children with ECC might be treated with SDF solution by dentist; or
- advised to visit a dentist for treatment at HKCS clinic

[Image: Close-up of a mouth receiving treatment]
Summary 2011 - 2012

- 100 kindergartens has been served
- 12,428 kindergarten children received oral health education
- 11,816 children were examined
- 5,131 (43%) of them was suffering from ECC
- 4,446 (87%) accepted SDF treatment

http://facdent.hku.hk
<table>
<thead>
<tr>
<th>Item</th>
<th>N1</th>
<th>K1</th>
<th>K2</th>
<th>K3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of children participated in the service</td>
<td>212</td>
<td>2,784</td>
<td>4,144</td>
<td>5,288</td>
<td>12,428</td>
</tr>
<tr>
<td>Number of children accepted SDF if needed</td>
<td>195</td>
<td>2,431</td>
<td>3,622</td>
<td>4,526</td>
<td>10,774</td>
</tr>
<tr>
<td>% of children accepted SDF if needed</td>
<td>92%</td>
<td>87%</td>
<td>87%</td>
<td>86%</td>
<td>87%</td>
</tr>
<tr>
<td>Number of children examined</td>
<td>158</td>
<td>2,559</td>
<td>3,978</td>
<td>5,121</td>
<td>11,816</td>
</tr>
<tr>
<td>Number of children with untreated decay</td>
<td>19</td>
<td>1,020</td>
<td>1,657</td>
<td>2,435</td>
<td>5,131</td>
</tr>
<tr>
<td>Number of children received SDF treatment</td>
<td>15</td>
<td>863</td>
<td>1,417</td>
<td>2,151</td>
<td>4,446</td>
</tr>
<tr>
<td>% children received SDF treatment</td>
<td>79%</td>
<td>85%</td>
<td>86%</td>
<td>88%</td>
<td>87%</td>
</tr>
<tr>
<td>Number of untreated decayed teeth</td>
<td>47</td>
<td>4,735</td>
<td>7,754</td>
<td>11,317</td>
<td>23,853</td>
</tr>
<tr>
<td>Number of decayed teeth treated with SDF</td>
<td>38</td>
<td>4,131</td>
<td>6,786</td>
<td>10,105</td>
<td>21,060</td>
</tr>
<tr>
<td>% of decayed teeth treated with SDF</td>
<td>81%</td>
<td>87%</td>
<td>88%</td>
<td>89%</td>
<td>88%</td>
</tr>
</tbody>
</table>
Conclusions

- Trained and set up an outreach team to serve the community
- Partnered with NGOs and industry to successfully implement dental outreach service for kindergarten children as planned
- Targeted successfully to children in need
- Won the Faculty’s Knowledge Exchange Award
- Received another $1.25 Million donation to HKU to continue the service
FDI World Congress 2012
Thank you!

HKU Faculty of Dentistry
34 Hospital Road, Hong Kong, China

http://facdent.hku.hk

Faculty of Dentistry
The University of Hong Kong

Tomorrow’s Dentistry……Today