Fluoridated and iodised in Lao PDR

Expert Panel on Oral Health, World Health Organization
<table>
<thead>
<tr>
<th>Age Group</th>
<th>DT(dt)</th>
<th>MT(mt)</th>
<th>FT(ft)</th>
<th>DMFT(dmft)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 years</td>
<td>(4.28)</td>
<td>(0.02)</td>
<td>(0)</td>
<td>(4.30)</td>
<td>73.3</td>
</tr>
<tr>
<td>5-6 years</td>
<td>(5.96)</td>
<td>(0.11)</td>
<td>(0.02)</td>
<td>(6.09)</td>
<td>84.4</td>
</tr>
<tr>
<td>12 years</td>
<td>0.89</td>
<td>0.05</td>
<td>0.04</td>
<td>0.98</td>
<td>43.0</td>
</tr>
<tr>
<td>15-18 years</td>
<td>1.22</td>
<td>0.14</td>
<td>0.14</td>
<td>1.5</td>
<td>52.8</td>
</tr>
<tr>
<td>35-44 years</td>
<td>1.71</td>
<td>1.25</td>
<td>0.15</td>
<td>3.1</td>
<td>69.3</td>
</tr>
<tr>
<td>&gt;60 years</td>
<td>2.61</td>
<td>3.99</td>
<td>0.08</td>
<td>6.69</td>
<td>82.3</td>
</tr>
</tbody>
</table>
Caries status in primary teeth at 6 yr old children

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>dmft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>2005</td>
<td>2.03</td>
</tr>
<tr>
<td>Malaysia</td>
<td>2007</td>
<td>3.6</td>
</tr>
<tr>
<td>Thailand</td>
<td>2012</td>
<td>4.4</td>
</tr>
<tr>
<td>Vietnam</td>
<td>2001</td>
<td>6.1</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>2012</td>
<td>6.1</td>
</tr>
<tr>
<td>Cambodia</td>
<td>2006</td>
<td>8.3</td>
</tr>
<tr>
<td>Philippines</td>
<td>2006</td>
<td>8.4</td>
</tr>
</tbody>
</table>
## Caries prevalence in primary teeth

<table>
<thead>
<tr>
<th>country</th>
<th>Age (year of age)</th>
<th>prevalence (%)</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>3</td>
<td>24.4</td>
<td>2005</td>
</tr>
<tr>
<td>Thailand</td>
<td>3</td>
<td>51.7</td>
<td>2012</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>3</td>
<td>73.3</td>
<td>2012</td>
</tr>
<tr>
<td>Mongolia</td>
<td>3-5</td>
<td>87.8</td>
<td>2007</td>
</tr>
</tbody>
</table>
WHO’s World Health Assembly (2007)

• Member states adopted a resolution on oral health, which urged the establishment of national plans for the use of Fluoride based on appropriate programmes for automatic administration through drinking water, salt or milk and/or topical use such as affordable toothpaste.
Community Fluoride Approach in Asia

- Water fluoridation
  - China SAR Hong Kong, Malaysia, Singapore, Korea, South Vietnam, Brunei
- Milk fluoridation
  - Thailand
- Salt fluoridation
  - Lao PDR, North Vietnam
Choice from Lao MOH in 2005

- High level of decay
- Water fluoridation not practical
- Low fluoride in natural water
- Iodine and fluoride compatible
- Toothpaste not accessible for all
Why? Salt fluoridation

• Salt is consumed by virtually all populations
• 250 ppm F (adults and children)
• Amount consumed is constant (~10 g/day)
• Overdose is virtually excluded (safe)
• Concentration of fluoride very low in water in Lao
• No risk to use both toothpaste and fluoridated salt
Cariostatic Effectiveness of Fluoridated Salt

- **France:** National mean DMFT_{12} decreased from **4.2 to 2.07** from 1987-1993
- **Montpellier** DMFT_{12} **1.42 in 1999 and 1.29 in 2002**
- **Heidelberg** DMFT_{12} **1.56 in 1999 and 1.15 in 2002**

*Tramini P., Schweiz Monatsschr 115:656-658 (2005)*
LAO SALT FACTS

• Lao needs 30,000 tons of salt per year
• 9 salt factories
• Producers are well organized in an association
• Factories produce 95% of countries’ salt needs
• Factories have 100% iodization capacity
• Sufficient funds to self finance iodine provisions
Salt Production: 27,300 tons/year*

*estimated maximum capacity increases or decreases depending on harvest season

Salt Factory Mapping 2015

13/04/17

fluoridated salt 2016
SALT PRODUCTION 2015

• BOILED SALT = 12,488 TONS (12,163 IODIZED)
• SOLAR SALT*= 11,310 TONS (2,200 IODIZED)
• TOTALS 23,798 TON (14,363 IODIZED)
Decree N° 1604/MS – October 2011: Standards for fluoridated salt on Lao market
• Pilot project at Khok Saath from 2011
90% of the samples have a good concentration of iodine and fluorine.

Results doubled checked in French and Thai labs
# Monitoring Urinary Fluoride in 4-yr children, 2016

<table>
<thead>
<tr>
<th></th>
<th>Baseline morning ug/hr</th>
<th>Baseline afternoon</th>
<th>After 6-mo morning</th>
<th>After 6-mo afternoon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt F in Lao</td>
<td>4.7 (3.32)</td>
<td>9.5 (4.65)</td>
<td>4.8 (2.49)</td>
<td>9.6 (5.33)</td>
</tr>
<tr>
<td>WHO standard</td>
<td>7-12 (low)</td>
<td>8-13 (low peak)</td>
<td>15-20 (optimum)</td>
<td>18-27 (optimum peak)</td>
</tr>
<tr>
<td>Milk F in Thai</td>
<td>9.0 (4.87)</td>
<td>9.0 (4.62)</td>
<td>10.7 (6.49)</td>
<td>26.5 (12.02)</td>
</tr>
</tbody>
</table>
Interpretation of urinary fluoride monitoring

• Low fluoride intake in 4-yr old Lao children
• Safety for fluoridated salt consumption in children
• Monitoring period at 6-month after fluoridated salt showed no increased urinary fluoride in comparison with baseline data
• Need more monitoring urinary fluoride in longer period such as 1-yr and over
Fluoridated and iodised salt in Lao PDR

• The main objective for caries reduction in Lao children

• This is the Lao MOH project with support from AOI and WHO

• Lao Dental Association and all Lao dentists should support this mission with good scientific understanding

• Promoting fluoridated and iodized salt for consumption in all age group in the community to replace the conventional salt

• Encouraging dental patients to use fluoridated and iodized salt in their routine daily family life

• Ensuring the safety of consuming fluoridated and iodized salt
Fluoridated and iodized salt in Madagascar

• The main objective for caries reduction in Madagascar children

• This is the Madagascar MOH project with support from AOI and WHO

• Promoting fluoridated and iodized salt for consumption in all age group in the community to replace the conventional salt

• 75% coverage for fluoridated and iodized salt in Madagascar in 2017

• Lessons from Madagascar was mainly from salt factories and MOH strong support
Fluoridated and iodized salt in Madagascar

Main lessons

• Implication of MOH
• Only one MOH program for Fluoridated and iodised salt
• Obligation to produce fluoridated and iodized salt with decree
• Chief Dental officer for improving program
• Committee with stakeholders to improve program
Improved oral health and enhanced quality of life

- Oral disease (dental caries) need to be treated or prevented as to control pain and discomfort and enhance the quality of life
Thank You

Thank You