INTRODUCTION

- Dental caries is an important non-communicable disease (NCDs) affecting a significant proportion of the population in the world, particularly young children. 6
- Various public health measures such as using fluorides in both topical as well as systemic forms is employed in many parts of the world to prevent dental caries. 7
- Despite the use of fluorides, the permanent molars are still susceptible to dental caries, and hence additional preventive programs are essential. 8
- Among school-aged children, the majority of the increment in dental caries has been detected on pit and fissure surfaces of first and second molars. 9
- In children or teeth susceptible to caries, pit and fissure sealants can be used as a preventive measure to prevent dental caries. 10
- School-based pit and fissure sealant programs are one such public health initiative to prevent dental caries in molars. 11
- The effectiveness of school-based pit and fissure sealant programs in preventing caries among young children has not been well documented; hence the present systematic review was undertaken.

AIM & OBJECTIVES

- To investigate the effectiveness of school-based pit and fissure sealant programs in the prevention of dental caries in children.
- To document and report on data concerning the retention of sealants.
- To assess cost effectiveness of various school or community-based pit and fissure programs.
- To find out whether school-based pit and fissure sealant programs are implementable in India.

RESULTS

Table 1: Effectiveness of school-based pit and fissure sealant application in the prevention of dental caries

<table>
<thead>
<tr>
<th>No.</th>
<th>Author’s Name</th>
<th>Study setting</th>
<th>% of complete retention of dental caries after sealant</th>
<th>CR 1</th>
<th>CR 2</th>
<th>CR 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Armfield JM</td>
<td>Alaska</td>
<td>62.4%</td>
<td>0.65-1.22</td>
<td>0.57-1.00</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Wendt LK et al</td>
<td>Alaska</td>
<td>78%</td>
<td>0.65-1.22</td>
<td>0.57-1.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Bailit et al</td>
<td>Alaska</td>
<td>54%</td>
<td>0.65-1.22</td>
<td>0.57-1.00</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Memarpour M</td>
<td>Alaska</td>
<td>26.1%</td>
<td>0.65-1.22</td>
<td>0.57-1.00</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Memarpour M</td>
<td>Alaska</td>
<td>24%</td>
<td>0.65-1.22</td>
<td>0.57-1.00</td>
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</tr>
</tbody>
</table>

Table 2: Cost effectiveness of school-based pit and fissure sealant programs

<table>
<thead>
<tr>
<th>No.</th>
<th>Author’s Name</th>
<th>Study setting</th>
<th>% of completely retained sealant</th>
<th>CR 1</th>
<th>CR 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gelenas D</td>
<td>Alaska</td>
<td>46%</td>
<td>0.65-1.22</td>
<td>0.57-1.00</td>
</tr>
<tr>
<td>2</td>
<td>Gelenas D</td>
<td>Alaska</td>
<td>46%</td>
<td>0.65-1.22</td>
<td>0.57-1.00</td>
</tr>
</tbody>
</table>

Table 3: Retention of pit & fissure sealants

No. | Author’s Name | Study setting | % of completely retained sealant | Follow-up at |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Parnell, Kental (2003)</td>
<td>Alaska</td>
<td>56%</td>
<td>3yr</td>
</tr>
<tr>
<td>2</td>
<td>Tai, Rjetal</td>
<td>China</td>
<td>77.5%</td>
<td>3yr</td>
</tr>
<tr>
<td>3</td>
<td>Bengtsson H</td>
<td>Sweden</td>
<td>58%</td>
<td>3yr</td>
</tr>
<tr>
<td>4</td>
<td>Sakuma S, Yoshihara A, Miyazaki H, Kobayashi S</td>
<td>Japan</td>
<td>60%</td>
<td>3yr</td>
</tr>
</tbody>
</table>

Dental caries is an important public health problem in the world, particularly in the developing and under-developed countries. Even though there is decline in dental caries in the world, largely due to use of fluorides, caries still affects 60-90% of children out of the world. 21

Results of this systematic review revealed that school-based pit and fissure sealant programs are effective in preventing dental caries in young children. The prevention ranged from 24% to 97.1% when compared to unsealed groups. 11,12

School-based pit and fissure sealant programs are effective when targeted toward high-risk individuals, who are 8 to 10 times more likely to develop dental caries than low-risk children. 13

The concept of a WHO healthy-promoting school project can be incorporated along with “School-based pit and fissure sealant programs” for promotion of oral health. 22

A significant correlation has been found between sealant retention and its caries preventive effect; although sealant retention rates decline to 85% after 1 year and to 50% after 5 years. 23

The present study revealed that a community-based pit and fissure sealant program is cost effective, with a cost-benefit ratio 1.84. 24 Even though school-based pit and fissure sealant programs are effective, their implementation depends upon manpower, infrastructure, budgets with active community support, stake holders in government, NGOs and individual charities.

School-based pit and fissure sealant programs are not feasible in India due to lack of budget and active support from government agencies. However, it could be implemented if resources were available. 18

CONCLUSIONS

- School-based pit and fissure sealant programs result in a significant reduction of dental caries and may be economically viable as the cost benefit ratio is high.
- Similar programs could be implemented in India if resources were available. The need should be ascertained before implementation.

REFERENCES