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References
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List of Abbreviations

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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ARCPOH</td>
<td>Australian Research Centre for Population Oral Health</td>
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<tr>
<td>CDC</td>
<td>The Centre for Disease Control</td>
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<td>CFS</td>
<td>The Child Fluoride Study</td>
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<td>COHS</td>
<td>The Child Oral Health Study</td>
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<tr>
<td>COHQuL</td>
<td>Child oral health-related quality of life</td>
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<tr>
<td>CPQ</td>
<td>Child Perception questionnaire</td>
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<tr>
<td>DAI</td>
<td>Dental Aesthetic Index</td>
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<tr>
<td>DEJ</td>
<td>Dentino-enamel junction</td>
</tr>
<tr>
<td>DMFS</td>
<td>Decayed, missing and filled permanent tooth surface</td>
</tr>
<tr>
<td>dmfs</td>
<td>Decayed, missing and filled deciduous tooth surface</td>
</tr>
<tr>
<td>F</td>
<td>Fluoride</td>
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<td>FRI</td>
<td>The Fluorosis Risk Index</td>
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<tr>
<td>MRC</td>
<td>The Medical Research Council</td>
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<tr>
<td>NHMRC</td>
<td>The National Health and Medical Research Council</td>
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<tr>
<td>OHRQuL</td>
<td>Oral health-related quality of life</td>
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<td>PPQ</td>
<td>Parental Perception questionnaire</td>
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<tr>
<td>SA</td>
<td>South Australia</td>
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<tr>
<td>SADS</td>
<td>South Australian Dental Service</td>
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<td>SD</td>
<td>Standard deviation</td>
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<td>SDS</td>
<td>School Dental Service</td>
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<td>TF</td>
<td>The Thylstrup and Fejerskov Index of fluorosis</td>
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<tr>
<td>TSIF</td>
<td>The Tooth Surface Index of Fluorosis</td>
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Abstract

The use of fluoride involves a balance between the protective effect against caries and the risk of having fluorosis. Fluorosis in Australian children was highly prevalent in the early 1990s. Policy initiatives were introduced to control fluoride exposure so as to reduce the prevalence of fluorosis.

Objective:

The study aimed of describing the prevalence, severity and risk factors for fluorosis, and to describe the trend of fluorosis among South Australian children. The study also aimed of exploring the effect of the change in fluoride exposure on dental fluorosis and caries.

Methods

This research project was nested in a larger population-based study, the Child Oral Health Study (COHS) in Australia 2002–2005. The parent study’s sample was chosen using a multistage, stratified random selection with probability of selection proportional to population size. Fluoride exposure history was retrospectively collected by a parental questionnaire. This nested study sample (n=1401) was selected from the pool of South Australian (SA) COHS participants. Children were selected by year of birth to form three birth cohorts: those born in 1989/90; 1991/92; and 1993/94. Children were approached in two further stages: a dental health perception questionnaire, and a clinical examination for fluorosis. Some 898 children took part in the first stage. Among those, one trained dentist examined 677 children for fluorosis under clinic conditions using two indices (the Fluorosis Risk Index (Pendrys, 1990) and the TF Index (Thylstrup and Fejerskov, 1978)). The Dental Aesthetic Index score (DAI) was also recorded. Caries experience extracted from dental records of all previous visits to school dental clinics was used to enable calculation of dmfs/DMFS scores at different anchor ages.

Data were re-weighted age and sex to represent the South Australian child population. Per cent lifetime exposure to fluoride in water and patterns of discretionary fluoride use were calculated. Fluorosis data were used to calculate the prevalence and severity of fluorosis. Caries dmfs/DMFS scores were calculated at different anchor ages to enable comparison between birth cohorts.

Results

A higher proportion of children in the later birth cohorts used low concentration fluoride toothpaste, and a smaller amount of toothpaste was used when they commenced toothbrushing. There was a significant decline in the prevalence of fluorosis across the three successive birth cohorts. Risk factors for fluorosis, defined by the two indices, were use of
standard fluoride toothpaste, an eating and/or licking toothpaste habit, and exposure to fluoridated water. Means (SD) of the deciduous caries dmfs scores at age six and eight were 1.45 (3.11) and 2.46 (3.93) respectively. Evaluation of the “trade-off” between fluorosis and caries with fluoride exposure indicated that the use of low concentration fluoride toothpaste and preventing an eating/licking of toothpaste habit could reduce the prevalence of fluorosis without a significant increase in caries experience.

Conclusion

There was a marked decline in the prevalence of fluorosis across the three successive birth cohorts. The decline was linked with the reduction in exposure to fluoride. Exposure to fluoridated water and several components of toothpaste use were risk factors for fluorosis. Establishing an appropriate use of fluoride toothpaste could be successful in reducing fluorosis without a significant increase in caries experience.
Declaration
This work contains no material which has been accepted for the award of any degree or
diploma in any university or other tertiary institution and, to the best of my knowledge and
belief, contains no material previously published or written by another person, except where
due reference has been made in the text.

I give my consent to this copy of my thesis, when deposited in the University Library, being
available for loan and photocopying.

Signed: ______________________________    ___ / ___ / ___
Loc Giang Do
Acknowledgements

I wish to express my sincere gratitude to Professor A. John Spencer of The University of Adelaide for his thorough supervision of this project and for his endless guidance and encouragement throughout the research process and writing-up the thesis.

I wish to thank the help and guidance from Dr Anna Puzio, Dr Kaye F Roberts-Thomson and Professor Gary D Slade of The University of Adelaide, whose contributions were important to successful completion of my research. The generous help of Professor Steven Levy of the University of Iowa in providing training materials and sharing experience is highly appreciated.

I would like to specially thank Mr Jason M Armfield, Ms Carmen Koster, and many others in the Child Oral Health Study’s team, whose work has played major roles in setting up of this project.

I would like to acknowledge The University of Adelaide in providing my scholarship during 2001-2004, and the South Australian Dental Service in organising the fieldwork in 2003/04. Assistance from the staff of the eight SADS clinics that were sites of the study is specially appreciated.

I would like to express gratitude to Ms Dana Teusner for help with database, Ms Anne Ellershaw for weighting the data, Dr Suzanna Mihailidis and Ms Liana Luzzi for their encouragement and their help in editing the thesis, Mrs Judy Stewart for help with the questionnaires, Mrs Silvana Marveggio and Mrs Lorna Lucas for help with administrative matters, and all the friendly staff of Australian Research Centre for Population Oral Health at the University Adelaide for their highly qualified assistance during the study.

I want to express my dearest love to my family, who always support and encourage me in my study and in my life. Their love and help are essential for my life and career.