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## CHANGES IN SOUTH AUSTRALIAN CHILDREN'S CARIES EXPERIENCE

The recent paper on the rising trend in dental decay rates among South Australian School Dental Service children is a good reason for increased interest in dental decay in children (Changes in South Australian children's caries experience: Is caries re-surfacing? Australian Research Centre for Population Oral Health, The University of Adelaide, South Australia. *Aust Dent J* 2004;49:98-100). A number of control factors such as fluoridation, diet, dentifrices and oral hygiene are well researched, but there is little or no interest in the association, if any, between the incidence of dental examinations in young children and subsequent levels of decay experienced by those children.

Data from the Child Dental Health Surveys 1996-2000, published by the Dental Statistics and Research Unit website at URL: 'http://www.adelaide.edu.au/spdent/dsru/', offers the means of testing whether there is any association between dental examinations and subsequent decay in children. This can be achieved by comparing, as numbers of paired observations, the rates of decayed teeth of children in the School Dental Services of the various States and Territories with the percentages of children who received dental examinations within the preceding 12 months. Because of differences in tabulation and low numbers in younger age groups in some States, it is necessary to pool the data from several years to obtain samples of adequate size.

For children aged seven and over there is no significant relationship between examinations received within the preceding 12 months and subsequent decay; but for six year olds, there is a significant positive relationship between percentages of examinations within the preceding 12 months and subsequent rates of decayed teeth.

For five year olds there is a very significant, positive correlation between the percentages of children who received dental examinations within the preceding 12 months (nominally as four year olds) and rates of decayed teeth in subsequent years. This association persists so strongly that the rates of decayed teeth of seven year olds are still highly significantly related to the percentages of children who were examined as four year olds, three years earlier.

Conversely, there is equally significant negative correlation between the rates of decayed teeth of seven year olds and the percentages of those, who were examined in the School Dental Services as two or three year olds, but missed examination as four year olds three years earlier.

In view of the varying statistical links between dental examinations in children under the age of six and subsequent levels of decay, either radical modifications in examinations should be made or four year olds examinations should be abandoned altogether.

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## CHANGES IN SOUTH AUSTRALIAN CHILDREN'S CARIES EXPERIENCE: AUTHORS' REPLY

Andrew Robertson is one of those rare inquisitive dentists not afraid of data and their manipulation. In response to our Data Watch article, Robertson has visited our website and extracted data on the Child Dental Health Surveys 1996-2000 by State/Territory and age.

Two key variables appear to be of interest to Robertson: examinations received in the preceding 12 months and subsequent decay. Robertson's hypothesis is that there is an association between the receipt of examinations and subsequent development of decay. There is an issue with a causal inference from any such association. Robertson is searching for associations between

examinations at a certain age and subsequent decay. However, any association found between these measures may be highly confounded. Higher decay at a preceding age may be associated with increased numbers of examinations conducted. Decay at a preceding age may also be associated with subsequent decay. Therefore, any apparent association with subsequent decay may simply be exploiting such aspects of the data set and is likely to be spurious.

Robertson claims the measures for examinations and subsequent decay are paired data. Paired data consists of measures at different times on the same individual. This is not the case in these data. Those children examined in one year are not necessarily examined for decay in the subsequent year. This reflects both the dynamics of enrolment and recall intervals between courses of care in the School Dental Services.

Robertson also faces the difficulty of rationalizing both a positive and negative association between examinations and subsequent decay. Such findings tend to suggest that the analysis by Robertson has simply found idiosyncratic features in the data, rather than some generalized result.

On a more technical level, the measures for percent of children receiving examinations and subsequent decay can only be estimated. The percentage of children examined in the preceding year was estimated based on the number of examinations in that year divided by the numbers of children enrolled. Subsequent decay is presumably the difference between cross-sectional estimates of the decayed, missing or filled teeth or tooth surface score.

The question Robertson has raised is interesting, but more purposeful research would be required to tease out a valid answer.

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