CRITIQUE OF RECENT PAPERS

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In an earlier article I drew attention to selective small-sample studies which claimed to demonstrate a benefit from drinking-water fluoridation. One in particular, of small samples of 5-year-olds from four selected communities in a region of my country's South Island, claimed to show up to 60% less tooth decay in the two fluoridated communities than in the selected nonfluoridated community, with another community which had recently defluoridated (Timaru) occupying an "in-between" position. Though the samples of children examined in each town were randomly selected, the communities were not. When I obtained the School Dental Service data for all 5-year-olds in the fluoridated and nonfluoridated areas of the region, and for all 5-year-olds in the recently defluoridated community, the claimed large differences did not exist. It was revealed that the selected non-fluoridated community (Daman) had poorer child dental health than other non-fluoridated communities in the region, so was far from typical, and that there had been no deterioration in child dental health in Timaru, which had occupied the same "in-between" position before fluoridation was stopped.

The authors of that study have now published their data obtained for 14-year-olds in the same selected towns, making similar claims for that age group (see abstract, page 118). The authors' conclusions, suggested to be representative for all New Zealand, are this time contradicted by the School Dental Service data collected for all 12- and 13-year-old children in the region, which were available to the authors before they made their selection. The comprehensive school dental data again show that the unfluoridated town is far from typical, and that Timaru had the same "in-between" position before fluoridation was stopped. It is extremely unlikely that the relative situation would have changed when the children were one year older. Differences in tooth decay rates existed between New Zealand communities before there was fluoridation. Later comparisons are of little value without pre-fluoridation information.

One of the selective study's fluoridated places (Dunedin) is a larger city and university centre. The other larger university city in the region (Christchurch) is not fluoridated, but though similar to Dunedin in size and population composition it was not selected for comparison. An earlier published study (not cited by Treasure and Dever) had presented school dental data from those centres showing that the percentage of children with decay-free teeth was greater in the unfluoridated city. Early large-scale surveys and treatment records had revealed no such difference between these cities before fluoridation.

Treasure and Dever argued that the "routinely collected" school dental data could be affected by population mobility. However, I had found that exclusion of children who were not continuous residents made little difference to the results. Interestingly, Treasure's and Dever's results are similar both before and after they excluded non-continuous residents from their samples.
It has recently been argued, by health officials who continue to support fluoridation, that the published school dental data for all children were "highly subject to examiner variation." But school dental staff at the time of data collection were part of a national service which maintained uniform diagnostic standards, and they had no pro- or anti-fluoridation bias when they recorded the information. On the other hand, the studies on which the officials rely, including Treasure’s and Dever’s, were carried out by fluoridationists whose examinations were not "blind" – that is, they knew which children came from fluoridated and from non-fluoridated areas. As Mark Diesendorf points out in his current review, there is not a single properly-controlled blind fluoridation study in which the test and control populations were similar and chosen randomly.

References

3 School Dental Service data supplied by Head and District Offices of the New Zealand Ministry and Department of Health, between 1981 and 1993.
8 National collection of School Dental Service patient history charts, Wellington.
9 Statement from South Canterbury Health Authority, Timaru Herald March 22 1995.
10 Diesendorf M. How science can illuminate ethical debates: a case study on water fluoridation. Fluoride 28 (2) 87-104 1995.