

RESEARCH SUMMARY

Dental health and fluoride supplements on Tristan da Cunha

Fluoride supplements and changes in tooth decay on the Island of Tristan da Cunha: 1966–1996 **P. A. Mossey, C. A. P. Southwick, W. L. Wrieden, P. Longbottom, G. Topping and D. R. Stirrups** *Br Dent J* 2003; 195: 159–162

Background

The island of Tristan Da Cunha is one of the few examples in the world of a remote enclosed community. The inhabitants of the island were transported to England in 1961 as a result of a volcanic eruption and during their time in England they received a detailed dental health examination. They were later examined back on the island in 1966 by Dr John Fisher and in 1982 a school fluoride supplementation programme was introduced.

Aim

The present paper reports the results of the first dental health survey to be carried out on the island since the introduction of a regular school fluoride supplementation programme in 1982.

Subjects and methods

A cohort of 6–19-year-old subjects on the island were examined in 1996 using a similar protocol to that which was used by Fisher in the 1966 examination.

Results

Comparing the 6–12-year-olds who were caries free in 1966 with those caries free in 1996 using the Chi-squared statistic reveals a statistically significant greater number caries free in the more recent cohort ($\chi^2 = 6.0$, $p = 0.014$). For the older age group (13–19 years), a similar comparison reveals a highly statistically significant difference ($\chi^2 = 12.26$, $p = 0.005$).

Conclusions

A significant increase in the number of caries free 6–19 year old children in Tristan Da Cunha between 1966 and 1996 was noted: 1) This is a significant finding in the light of the school fluoride supplementation programme that was introduced on the island in 1982; and 2) Appropriate fluoride supplementation regimes may have conferred a protective effect in a group of children with a cariogenic diet. The paper discusses the significance of this study in the support of fluoridation as a method of reducing the prevalence of dental caries and also discusses possibilities for future research on the island of Tristan Da Cunha.

IN BRIEF

- The island of Tristan da Cunha is one of the few remaining enclosed communities in the world.
- This paper reports the results of the first dental health survey to be carried out on the island since a fluoride supplementation programme was introduced in 1982.
- The dental health of 6–19-year-old children in Tristan da Cunha showed a significant improvement between 1966 and 1996.
- The number of caries-free individuals is suggestive of the efficacy of a school fluoride supplementation programme.
- The availability of longitudinal records makes this a good population for carrying out future studies of dental health and disease.

COMMENT

Whilst they may have difficulty defining its precise location on a globe, Tristan da Cunha is a name familiar to generations of dental students. The deterioration in oral health in this remote island community in the middle of the last century, following the change to a diet rich in fermentable carbohydrates, is frequently cited as evidence for the role of sugar in the aetiology of dental caries.

The present study reports a cross-sectional survey of 32, 6–19-year-olds conducted in 1996 and suggests a significant increase in the number of caries-free children over that observed in a previous survey in 1966. In the most recent survey, 13 (41%) children were caries free compared with just 2 (4%) participants in the 1966 survey. The authors conclude that the observed changes in caries status are highly suggestive of the effectiveness of a fluoride supplementation programme introduced to the island in 1982. Such a dramatic reduction, does indeed lead instinctively to the impression that children on the island have benefited from the fluoride supplements.

However, this study poses some interesting questions on study design and analysis in determining the effect of a preventive agent in a disease whose aetiology is multifactorial. The study is cross-sectional in nature, examined only 32 children, (who range in age from 6–19 years), and the baseline survey was carried out some 16 years before the introduction of the fluoride supplements and the second survey some 14 years post implementation. Together with the lack of a contemporary control group, these factors limit the degree to which the changes seen can be wholly attributed to the fluoride supplementation programme.

Recent systematic reviews have been critical of the standard of study design and epidemiological investigation in dentistry. Whilst not underestimating the practical difficulties in studying remote communities, the main implications of this study are the need for sound epidemiological methods in the evaluation of caries control measures, to take account of the many potential confounding factors.

In order that the undoubted value of programmes such as that introduced to Tristan da Cunha can be rigorously assessed and documented, it is beholden of policy makers and the dental research community that when such schemes are introduced in future, either in remote communities or elsewhere, that they include a scientifically rigorous evaluation involving a contemporary clinical examination, using calibrated examiners which follow a defined cohort of children on a longitudinal basis, with adequate controls, in order that the information arising can contribute to the scientific evidence base without criticism.

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