

# Evaluating oral health promotion activity within a general dental practice

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## IN BRIEF

- Highlights that oral health promotion consists of three separate components – oral health protection, prevention and oral health education.
- Informs fluorosis was not an outcome identified following the promotion of adult toothpastes at an early age in a practice in a non-fluoridated area.
- Proposes an opportunity exists to influence community oral health through oral health promotion in general dental practice.

The prevention of the common dental diseases is fundamental to modern day general dental practice. Oral health promotion (OHP) is therefore key to facilitating health outcomes within organisations. The literature surrounding OHP stresses the importance of evaluation in order to assess the effectiveness of OHP activities. This paper describes the evaluation of OHP within a general dental practice setting. Early attendance, the use of adult toothpastes during childhood and consequential fluorosis are investigated. A small service evaluation study of 100 consecutive patients was undertaken. The results support the ongoing promotion of early attendance and the use of toothpastes with adequate fluoride levels. There was no evidence of unsightly fluorosis in the sample studied.

## INTRODUCTION

This paper describes an evaluation of oral health promotion activities within one general dental practice. Prevention underpins the philosophy of the practice in its role to care for the community in order to influence population oral health.<sup>1</sup> It is essential for preventive activities to be evaluated in order to assess effectiveness.<sup>2</sup> This is true not only for community projects but also for individual dental practices in a role of community care. This is in tune with the Department of Health's strategy of improving oral health with the new dental contract.<sup>3</sup>

In order to share a common professional message within dentistry Levine and Stillman-Lowe<sup>4</sup> suggest four points should be made for oral health promoting: reduce the consumption, and especially the frequency of intake, of foods and drinks with added sugars; clean the teeth thoroughly twice every day with a fluoride toothpaste; promote the fluoridation of the

water supply; have an oral examination at least every year.<sup>4</sup> The sixth edition of this publication supports NICE guidelines with regard to dental attendance.

Understanding the causes of disease activity provides the maximum opportunity to patients to maintain disease inactive oral environments throughout life. Primary prevention is important if children are to develop without experiencing tooth decay. Early involvement with a dental practice allows primary preventive advice to be given. The promotion of antenatal advice regarding 'registration at birth' with ongoing regular care is beneficial to professional interactions in order to fulfill potential for oral health outcomes and is promoted by the profession.<sup>4</sup>

It is not possible for individual dental practices to directly influence water fluoridation policies; however, dental teams can directly promote the use of fluoride toothpastes. Fluoride toothpastes reduce dental decay by 24% on average compared with non-fluoride products.<sup>5</sup> There is some debate regarding the use of fluoride toothpastes for infants because of the risk of fluorosis. From a public health perspective, the risk of tooth decay and its consequences such as pain and extractions is greater than the small risk of fluorosis. This is particularly so for children considered to

be at a high risk of tooth decay by their dentist. There is evidence that toothpastes with fluoride concentrations less than 1,000 ppm are only as effective as non-fluoride toothpastes at preventing tooth decay.<sup>6</sup>

The aim of this service evaluation study is twofold; firstly, to assess compliance with two elements of the preventive advice promoted at the practice – 'registration at birth' with ongoing regular care and the use of adult toothpaste for children without rinsing; secondly, to quantify levels of fluorosis observed in the practice population.

## METHODOLOGY

The promotion of 'registration at birth' and the use of adult toothpaste without rinsing for children were established before 1995 as routine within the practice. Therefore, a cohort of patients born after 1995 but who would have had the opportunity to comply with advice regarding the use of adult toothpaste were chosen. Children between the ages of 8 and 15 years were included in the study. Consecutive child patients attending for routine care were targeted and parents were asked to complete an anonymous questionnaire to identify their child's behaviour patterns with regard to attendance and the use of adult

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Dean's index	Numbers
0	84
1	9
2	4
3	0
4	0
5	0
N/A Ortho app	3

toothpaste. Age, gender and postcode were also recorded (Fig. 1).

At the visit the clinician, of which there were three, was presented with a separate questionnaire; data were recorded for age, regularity of care, current disease status and the presence of fluorosis. Regularity of care was established according to visits per year, at least one per year was defined as regular. Current disease status was established using the normal coding utilised by the practice: white, caries free; green, past caries experience but currently healthy; yellow, low levels of disease; red, high levels of disease. Dean's index (Table 1) was used to score fluorosis.<sup>7</sup>

The parental questionnaire was kept by the parent during the visit so as to protect anonymity. Following the visit the clinical questionnaire was given to the parent so that both questionnaires could be matched and then posted into a collection box.

Age, gender and regularity of care were used to validate matched patient and clinician questionnaires in order to confirm correct pairing of separate questionnaires.

Associations between health outcomes and early behaviours were explored. Utilising SPSS 16, cross tabulations were undertaken for dichotomised health coding (white and green categorised as 'health' and yellow and red as 'disease') and early registration (two years of age or less), use of adult toothpaste (two years of age or less) and no rinsing after brushing.

Also the association between health outcomes and deprivation were explored. The patient's postcode was used to allocate a deprivation rank according to the 2011 Welsh Index of Multiple Deprivation (WIMD) and also the Child Welsh Index of Multiple Deprivation.

We are assessing the long term outcomes of our advice with regard to the use of toothpastes as young children. This is an anonymous questionnaire so you can be totally truthful with your answers. We are not checking on you, as individuals whether or not you have acted on our advice.

- How old is your child? .....Years
- At what age did your child first register at the dentist? .....Years
- Where has your child been cared for? **At this practice** ..... Years
- How would you describe your child's attendance at the dentist (tick one answer)?  
**Regular examinations** .....   
**Irregular examinations** .....   
**With a problem/pain** .....
- At what age did your child first use an 'adult' fluoride toothpaste? ..... Years
- After brushing does your child (tick one answer)?  
**Rinse with water** .....   
**Rinse with mouthwash** .....   
**Not rinse at all** .....
- At what age did the above behaviour (question 6) begin? ..... Years

Your child's postcode \_\_\_\_ \_\_\_\_

Fig. 1 Patient questionnaire

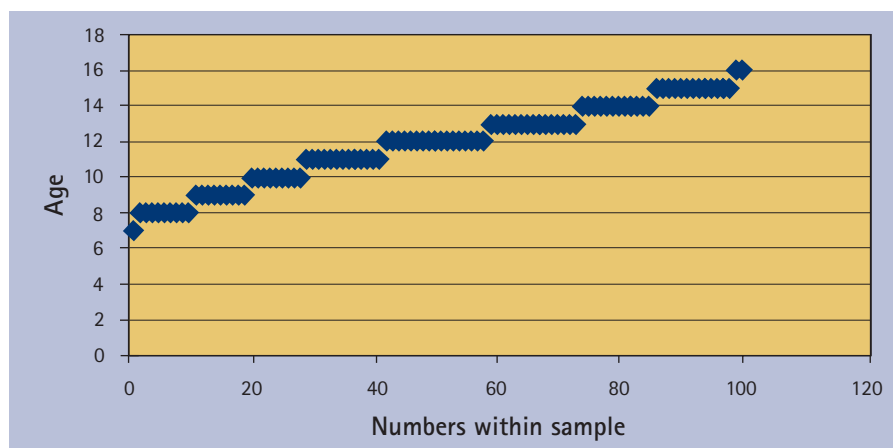


Fig. 2 Age distribution

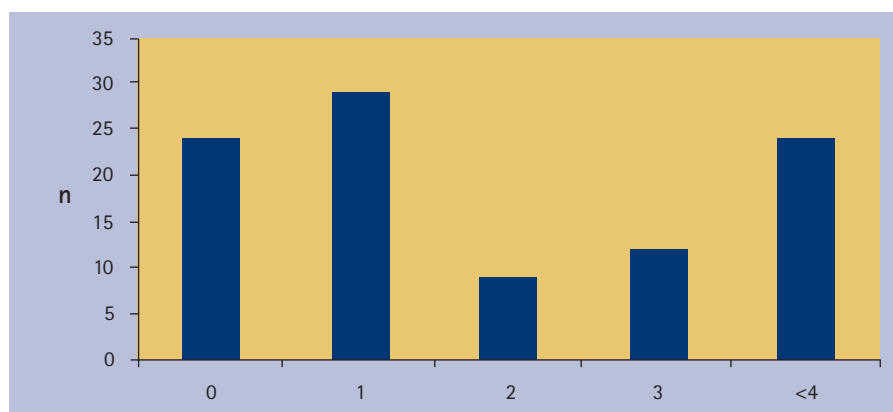


Fig. 3 Age registered

Ethical approval was considered unnecessary by the area research ethics committee, as this was a service evaluation.

**RESULTS**

All of the parents completed the service

evaluation questionnaire. Data collection started on 22 August 2011 and ended on 21 November 2011. Age, gender and regularity of care between the parent questionnaire and dentist questionnaire matched almost perfectly with only three item

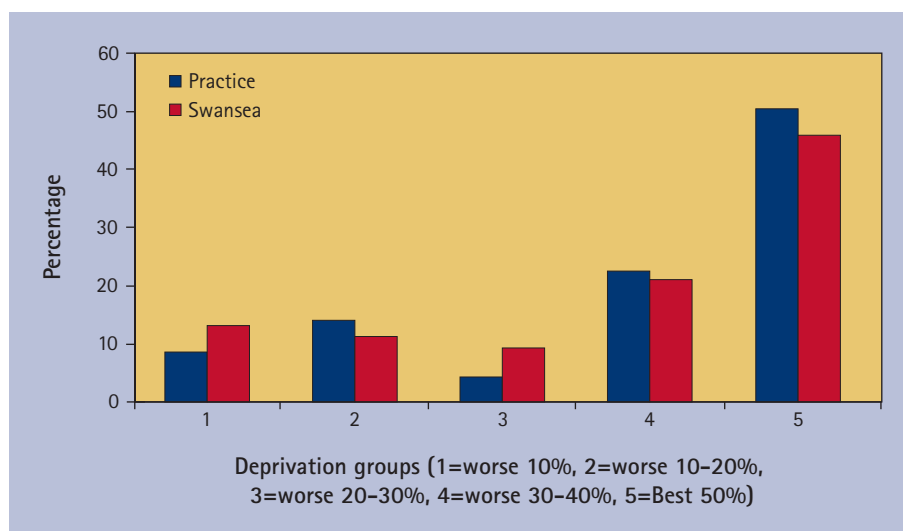


Fig. 4a Deprivation status (WIMD)

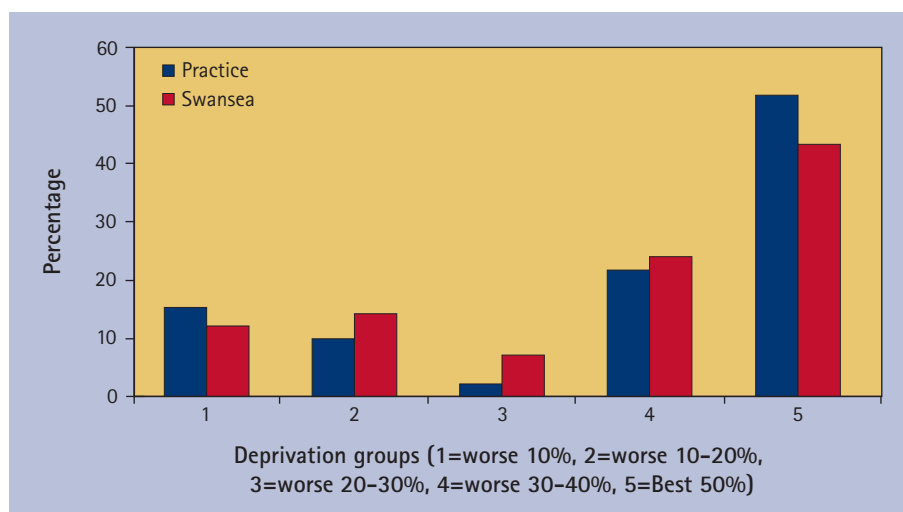


Fig. 4b Deprivation status (child WIMD)

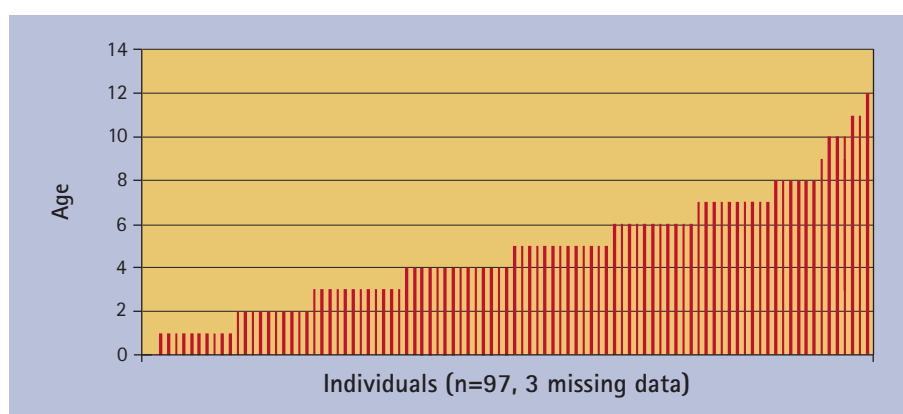


Fig. 5 Age at start of adult toothpaste

discrepancies and could be explained simply for example, recent age change.

One hundred questionnaires were completed, of which 52 participants were female. The age distribution is shown in Figure 2. The youngest child was almost 8 years and the eldest just turned 16 years old.

Seventy-six percent of the children had been cared for at this practice only, with 22% having been cared for by another dental practice also (two missing data).

Figure 3 shows the age at which the children were registered for care, 62% of the children were registered at the dentist before their third birthday at the age of

two years or less. Of these, 50% were registered at this practice for the whole time.

Ninety-seven percent of the sample received regular care. All those registered before their third birthday continued with ongoing regular care. All individuals attending the dentist irregularly were male.

Analysis of the postcodes showed that the postcodes fell into the deprivation bands shown in Figures 4a and b. Seven postcodes were not able to be allocated a deprivation score due to the fact that the postcode was incomplete or an English postcode.

Figure 5 shows the age at which the children started to use adult toothpaste. Twenty-two percent had used adult toothpaste from the age of two years or less. The entire sample used adult toothpaste before their teenage years.

Fifty-eight percent did not rinse after brushing, of the 42% that did rinse 12% rinsed with mouthwash. Of the 58% that did not rinse after brushing 23% had always behaved this way since before the age of two years.

Mottling scores are shown in Table 2 with 13 individuals showing signs of mottling. No scores demonstrating unsightly mottling (>2) were recorded.

The only significant difference observed for associations between health outcomes and the four variables, 'early registration', 'use of adult toothpaste before two years of age', 'no rinsing after brushing' and 'deprivation status', was for the age at which adult toothpaste was used ( $p = 0.008$ )

## DISCUSSION

This service evaluation, although executed rigorously, does not attempt to be a research project to test a hypothesis and draw conclusions. The results therefore must be interpreted to provide feedback in order to sustain and/or improve services. There are methodological limitations to the evaluation in that the sample investigated may not represent the cohort within the practice. Comparisons with practice profile data suggest that this is not the case and that the sample cohort reflects numbers and age distribution within the end of year NHS reports from Eastbourne for the time period investigated. The deprivation profile reflects other surveys undertaken at the practice with deprived sub-groups well represented.<sup>8,9</sup> There was no calibration of dentists with regard to assessment of health or fluorosis.

It could be argued that the low numbers of individuals attending irregularly suggests significant bias in the sample. On the other hand it could reflect compliance with regard to regular attendance. Contextual practice profile data support the latter.

Published NHS data show that the 0-2-year-old age group show low registration/attendance at dental practices compared with older age cohorts, with 0-2-year-old registrations at 20% compared with 60%, 70% and 65% for 3-5, 6-12 and 13-17-year-olds respectively of the population in 2001.<sup>10</sup> These low levels of registrations for 0-2-year-olds continued into the decade.<sup>11</sup> The current 0-2-year-old registration in Wales is 35% of the population.<sup>12</sup> Data from Northern Ireland showed that most child dental attendance only started at three years of age.<sup>13</sup> Other workers have reported 0-2 years age group attendance at dental practice as around 20% of the population.<sup>14</sup> Comparison of proportions of practice child numbers with population data do not show the above trend with numbers of 0-2-year-olds reflecting population ratios as with the other three age groups. With 62% of the sample registered before their third birthday, the results suggest that a policy of registration at birth has impacted on recruiting pre-school children for care.

Early attendance at dental practices, as part of a primary preventive strategy, is desirable in order to capitalise on key life stages for influencing good behaviours.<sup>15</sup> A consistent macro meso and micro approach is advised in oral health promotion literature to improve effectiveness.<sup>2</sup> Enhanced early registration figures in the community and in individual practices could be facilitated by community oral health promotion projects such as Designed to Smile ([www.designed-to-smile.co.uk](http://www.designed-to-smile.co.uk)) and Childsmile ([www.childsmile.org.uk](http://www.childsmile.org.uk)). This way the message becomes consistent from a macro, meso and micro approach rather than the 'insular' meso approach from individual dental practices. However, issues surrounding service redesign within general dental practice need to be addressed so as to increase capacity in order to enable general practitioners to provide access and retention to this pre-school population.<sup>1,16,17</sup> A recent report concludes that the Childsmile programme has not been as effective in retaining deprived sub-groups, the particular groups with greatest need.<sup>18</sup>

**Table 2 Mottling scores**

Classification	Criteria – description of enamel
Normal (0)	Smooth, glossy, pale creamy-white translucent surface
Questionable (1)	A few white flecks or white spots
Very mild (2)	Small opaque, paper white areas covering less than 25% of the tooth surface
Mild (3)	Opaque white areas covering less than 50% of the tooth surface
Moderate (4)	All tooth surfaces affected; marked wear on biting surfaces; brown stain may be present
Severe (5)	All tooth surfaces affected; discrete or confluent pitting; brown stain present

Early registration allows the communication of digestible chunks of information to parents regarding the need to brush teeth as soon as tooth eruption occurs and the use of toothpastes. Repeated positive communication increases the chance of compliance and sustainability of behaviour.<sup>19</sup> The use of toothpastes with fluoride of at least 1,000 ppm, preferably 1,450 ppm can be promoted. In addition a simple additional message of 'no rinsing, just spit out the froth' has no cost implications. The fact that 12% rinsed with mouthwash after brushing demonstrates the need for good communication as mouthwash may be perceived as an acceptable post brushing rinse. There is the possibility that lower concentrations of fluoride in mouthwashes may be counter-productive to the benefits of toothpastes with higher levels of fluoride.

It is clear that caries is associated with deprivation and therefore the most deprived populations have most to gain from primary preventive interactions.<sup>20</sup> The results of this service evaluation support the continued promotion of early registration, particularly with a target group that has the most to gain, namely the worst 20% deprived group. The results of this evaluation show that this sub-group is over-subscribed compared with the population norm when using both adult and child deprivation analysis.

Epidemiological evidence shows that the dmft in 5-year-old children increased over the period 1993 to 2003.<sup>21</sup> In addition the divide between the best and worse has become greater suggesting that the severity of disease has increased in the most deprived sub-groups.<sup>20</sup> The risk of fluorosis in the secondary dentition, following excess fluoride usage by young children, prompted toothpaste manufacturers in the 1980s to market children's toothpastes

with reduced amounts of fluoride concentrations (approx. 500 ppm). Whether the increase in severity of disease is a direct result of reduced fluoride concentrations in children's toothpastes is not known.

Recognising the limitations of this evaluation, the results do not show signs of problematic fluorosis and would therefore support the ongoing promotion of the use of toothpastes such as adult toothpastes with higher levels of fluoride for children in this setting, serving a non-fluoridated population. One obstacle to the use of adult toothpastes for children is taste. Fortunately, children's toothpastes can now be found with fluoride concentrations above 1,000 ppm (range from 1,000 ppm to 1,450 ppm) in order to make them more palatable to the child. This has only recently been the case. Current guidelines from the Department of Health also support the use of toothpastes with at least 1,000 ppm fluoride.<sup>22</sup>

The difference observed for health outcomes in children using adult toothpastes from a young age also supports their use from a young age. This result should be interpreted in the context of the crude nature of the sample size and design of the service evaluation.

Maintaining disease inactive oral environments is key to ongoing sustainable oral health and that means the promotion of primary prevention. Birth is an ideal time to start on the primary prevention journey. Effective preventive strategies require a relationship with patients over an extended period of time.<sup>23,24</sup> Therefore, any approach that would improve attendance for continuing care has the potential to enhance oral health outcomes in sub-groups that traditionally experience unsupervised neglected dentitions. This in conjunction with a structured approach to primary, secondary and tertiary

prevention would maximise the opportunity to improve oral health. It has often been reported that the new dental contract does not reward prevention, however, the registration of a baby at birth provides the opportunity for primary prevention at a key stage in life and can be rewarded through increased units of dental activity. How general dental practitioners define prevention is unknown<sup>25</sup> and it is possible that seeing pre-school children as a routine is not considered normal practice.

Downie *et al.*<sup>26</sup> define health promotion as having three separate elements: health protection, prevention and oral health education. Each element needs defining in order to maximise effectiveness. This paper has touched on the three elements that make the practice an oral health promoting organisation.

This evaluation provides much encouragement to the dental team delivering care based on a health promoting strategy. Although the evaluation is not a scientific research project, there is a sound evidence base for the message delivered. In order to establish whether or not the care delivered has had a significant effect on the oral health of the practice's child population further research is necessary.

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