



Oral health education and disease prevention in primary dental care: Insight from a pilot intervention targeting children aged 0–7 years in northeast England

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This paper outlines a number of issues arising from a primary-care and community-based oral health education (OHE) and disease prevention pilot targeting children aged 0–7 years in County Durham and Darlington during a six month period in 2011–12. The paper highlights the key practical challenges experienced by the NHS dental practices that provided OHE predominantly in community venues and the issues arising for those involved in managing the pilot on a day to day basis. Finally, the paper suggests potential solutions and learning points for dental public health practitioners. The work described in this paper relates to three relevant dental public health competencies: strategy development and implementation; strategic leadership and collaborative working for health and oral health improvement.

Abbreviations used : **IMD**, Index of Multiple Deprivation; **LSOA**, Lower Super Output Area; **NHS**, National Health Service; **OHE**, Oral Health Education; **OHI**, Oral Hygiene Instruction; **OHP**, Oral Health Promotion; **PCT**, Primary Care Trust.

Problem

The nationally co-ordinated 2007–08 dental health survey of 5-year-old children showed that 38.1% of children in County Durham and 39.6% of children in Darlington had experience of dental disease, compared to 30.9% of children across England (North West Public Health Observatory, 2009). Across the area in 2003–04, the uptake of NHS dental services by the children aged 0 to 2 years was generally very low with only 12% of these living in the district of Easington and 3% living in the Durham city area accessing NHS dental services. Lower Super Output Areas (LSOAs) are the smallest geographic units commonly used for planning purposes. Each LSOA contains approximately 1,500 people and in this project LSOAs were used as an indicator for the levels of deprivation in the areas from which patients were drawn. Almost one third (32%) of LSOAs in Durham and 26%

of LSOAs in Darlington, fall into the most deprived national quintile as measured by the Index of Multiple Deprivation (IMD).

The aims of the pilot were to assess how primary dental care teams could reduce local oral health inequalities and improve oral health in young children through practice and community-based OHE and disease prevention activities. The aims of the pilot aligned with the local oral health strategy and salaried dental service staff (who usually conduct community-based OHE) were engaged throughout. The pilot's objectives were to employ primary dental care teams to:

- Engage with local children aged 6 months to 7 years, their parents and carers to improve children's oral health through appropriate OHE activity in community-based venues
- Provide dietary advice and information on the use of fluoride toothpaste
- Provide toothbrushes, toothpaste (6 months to 7 years) and fluoride varnish (3 to 7 years) where this was deemed appropriate by primary care dental teams
- Improve the uptake of local NHS dental services by patients aged 6 months to 7 years.

Solution

The local PCT, who managed resources for NHS primary dental care at the time, proposed that the pilot would focus upon the provision of community-based OHE and disease prevention (professionally-applied fluoride varnish application in a practice environment) following key messages contained within existing evidence-based guidelines (Department of Health, 2009).

Letters were sent to all NHS dental practices across County Durham and Darlington inviting dental teams to attend an information and launch event. This provided an outline of the timescale available for the pilot (6 months) and PCT staff discussed potential engagement opportunities with local partners (e.g. schools, venues, councils and Children's Centres). Interested practices were requested to

devise and justify their own OHE and local engagement strategies in their bids for PCT funding. An experienced local lead in oral health promotion (OHP) was employed by the PCT on a sessional basis to provide advice and support to practices. When requested, the OHP lead assisted practices to develop appropriate OHE strategies for the types of community venue they had identified. Additionally, staff from the local salaried dental service provided in-house training sessions for interested dental teams covering key oral health messages. Subsequently, the PCT received formal applications for funding from interested dental practices.

Dental practices submitting bids to participate in the pilot were prioritised for funding by the local consultant in dental public health according to the oral health needs of the local population. Applications were assessed against three published criteria and practices were prioritised towards: areas of low uptake of dental care by children (identified via NHS dental activity data); local areas of high poverty (measured by IMD); and high levels of dental disease (identified using a local report detailing the dental health of 5-year-old children in County Durham and Darlington (1999-2000)). Ultimately, every practice that submitted a bid for funding was enrolled onto the pilot. However, several practices who submitted large bids did not receive all of the funding they had originally requested.

Twenty-nine practices were enrolled in the pilot (over one third of NHS dental practices across County Durham and Darlington). Participating practices agreed to provide the PCT with a minimum data set for each child contact using secure means. This included dates of birth and home addresses (including postcodes). This facilitated the analysis of demographic information for each child contact against their home LSOA and the associated IMD quintile. The dentists and dental care professionals involved in the pilot were registered with the General Dental Council and all abided by their professional duty to maintain patient confidentiality. Members of the dental team who chose to attend schools held current Criminal Records Bureau certificates.

Participating practices received payment from the PCT for every child who received oral hygiene instruction (OHI) along with the provision of a suitable tooth brush and appropriate fluoride toothpaste according to evidence-based guidelines (Department of Health, 2009). A further payment uplift was available where these children additionally received professionally-administered fluoride varnish in a practice environment.

The type of OHE activity undertaken and the community venues visited by dental practices varied, but they typically included dental teams travelling to local schools, Children's Centres, volunteer community groups and Council venues (e.g. swimming pools and toddler groups). They provided OHI and evidence-based advice around tooth brushing and diet. Where parents and carers were present, appropriate information was given about the use of fluoride toothpaste.

At the start of the pilot an email distribution list (known as 'OHE e-net') provided a two-way forum for dental teams to discuss any challenges they had experienced. Once the pilot was underway the OHP lead and salaried dental service staff facilitated several 'meet and

share' sessions to allow participating dental teams to learn from the one another's experiences and to meet key community representatives who could support access to different groups within the local population. Every dental team involved in the pilot was encouraged to maintain a reflective log of their OHE visits. These logs were supplemented on occasion by visits from the OHP lead to observe dental teams actually delivering OHE in their chosen community settings.

For analytical purposes, the data generated by the pilot were listed in three categories (by age group and whether or not children received fluoride varnish). All categories received various forms of OHE from dental health teams in dental practices or community venues. In total 18,139 children participated in the six-month pilot but only 15,514 children (85.5% of records) were associated with a valid dataset permitting full analysis (Table 1).

Analysis revealed that participating dental practices identified a high proportion of children from the most deprived IMD quintiles in County Durham and Darlington (Figure 1). This pattern was particularly the case for children residing in County Durham.

Following the pilot, the teams involved were invited to an evaluation event to learn from each other and to identify how to overcome challenges and barriers if the pilot were to be repeated. Teams from 22 of the 29 dental practices involved attended the evaluation event. The 72 attendees included: dental care professionals; dentists (principals and associates); qualified oral health educators; practice managers and representatives from the local salaried dental service. There was significant enthusiasm for extension and development of the pilot rather than the programme simply being a one-off event. Similarly, feedback from local schools and Council venues was reported to have been very positive, with a number of schools and community venues requesting additional visits from dental teams.

Challenges

Further detail with regard to the types of OHE activity undertaken by dental practices could have been monitored more robustly by the PCT in order to highlight any concerns or challenges faced by participating dental teams. Greater knowledge of the specific types of OHE activity undertaken would have allowed the PCT to more robustly assess the effectiveness and appropriateness of the approaches used. At the launch event every participating dental practice had been made fully aware of the evidence-based messages contained within the 'Delivering Better Oral Health' toolkit (Department of Health, 2009), but it is possible that some practices working without skilled oral health educators may have struggled to plan and impart appropriate oral health messages outside of a surgery environment. At the time the pilot was devised, the PCT wished to learn from the experiences of dental practices with respect to how dental teams decided to approach this task. However with hindsight, the wisdom of expecting some dental practices to undertake community-based OHE without formal training may be questioned.

It was noted that a small number of practices had acted competitively rather than collaboratively with

Table 1. The number of participating children with full datasets and the number of NHS dental practices involved in the pilot listed by former local government district.

Former Local Government District	Approximate Population	Dental practices (n)	Participation by:				Total participants
			0-2 year-olds	3-7 year-olds (received fluoride varnish)	3-7 year-olds (did not receive fluoride varnish)		
Darlington	105,564	3	303	316	517	1,136	
Chester-le-Street	53,692	0	100	53	474	627	
Derwentside	85,074	5	1,011	411	2,329	3,751	
Durham	87,725	4	443	606	1,540	2,589	
Easington	97,800	1	28	45	138	211	
Sedgefield	87,000	8	711	786	1,592	3,089	
Teesdale	24,457	1	159	186	434	779	
Wear Valley	65,000	7	659	856	1,817	3,332	
All districts	606,312	29	3,414	3,259	8,841	15,514	

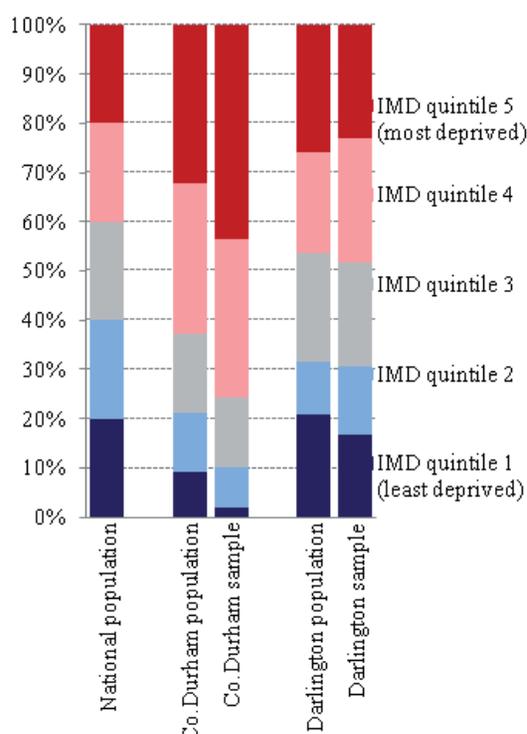


Figure 1. Children participating in the pilot grouped by Index of Multiple Deprivation (IMD) quintiles and compared to the wider County Durham and Darlington populations

respect to contacting community venues. In the small number of cases where this occurred, the actions of these practices had sometimes impinged upon the success of local practices and their attempts to engage with schools in their immediate neighbourhoods. As a consequence, there were several requests from dental teams for dedicated geographic areas around each practice if the pilot were to be extended. However, this action would perhaps undermine the spirit of collaboration which the PCT had wished to develop amongst pilot dental practices. At the launch event the PCT stated that it wished to encourage dental practices to collaborate with one another in the identification of potential community venues. It was disappointing that a small number of practices failed to inform local colleagues of their intentions with respect to identifying suitable venues, but this finding could reflect the fact that some practices continued to view the practise

of dentistry as a competitive business rather than as an opportunity to network with colleagues.

Several practices described difficulties in obtaining the names and addresses of children participating in school-based OHE activities. This issue generated concern for these practices as they were required by contract to provide these data in order to claim funding. These issues may perhaps have been alleviated if the PCT had formally written to local schools and nurseries in advance to advertise and officially endorse the initiative. A further challenge potentially limiting the health impact of the pilot relates to the short timescale involved. For example, delivering OHE in schools may increase knowledge in the short term, but research shows that behavioural changes require a longer-term input rather than reliance upon one-off interventions (Flanders, 1987).

The proportion of children who received professionally-administered fluoride varnish was not as high as anticipated at the start of the pilot. Despite the payment of an additional financial uplift to practices providing this evidence-based intervention, three-quarters of children aged 3-7 years did not receive fluoride varnish alongside appropriate OHE, OHI and relevant dietary advice. Possible explanations for this finding may stem from difficulties encountered by care teams attempting to organise practice-based appointments whilst working in a busy community environment, insufficient numbers of dental care professionals trained in additional skills or patients subsequently failing to attend these appointments. At the launch event, practices were informed that their activity within the pilot could include 100% OHE, 100% disease prevention (fluoride varnish), or any combination in between. With hindsight, it is perhaps not surprising that many practices opted to provide OHE interventions which could be planned in advance with minimal disruption to practice-based clinical activity. For future implementation of the pilot, further work is required to identify and overcome the perceived barriers to implementing practice-based fluoride varnish application.

The content of resource packs provided to children had varied substantially from practice to practice as had their associated financial costs. Feedback from the evaluation event identified a need for more standardisation across dental practices with respect to the suitability

and supply of oral health resources. For example, it was reported that some practices had used free samples provided by manufacturers, some had bought cheaper supermarket-branded toothpastes and others had decided to order premium-branded oral health products from dental suppliers. These choices were reported to have led to disproportionate costs between practices providing essentially the same service. A compromise may have been for the PCT to have bought oral health resources centrally on behalf of practices in order to maximise the return on scarce resources.

However, despite considering the issues above, the fundamental issue at the heart of this work centres upon whether evidence-based oral health messages were appropriately and effectively disseminated by dental care teams. It is unfortunate that detailed OHE activity data were not collected consistently by the PCT.

Future development

The pilot demonstrated the support and willingness of primary care dental teams to undertake OHE and disease prevention initiatives in primary dental care and community based settings. At the evaluation event practices wished to develop the initiative so as to maintain the momentum and motivation they had generated. However, despite positive comments from dental professionals with respect to implementing OHE, the data collected in this pilot do not answer several fundamental questions including whether dental teams routinely provided evidence-based OHE messages and if so, whether there was any impact upon the oral health of the children involved. Future work must focus upon implementing the existing evidence-base as well as ensuring that dental teams have the necessary skills to deliver effective OHE.

As discussed earlier in this paper, a variety of evidence-based documents exist which can inform approaches to improving the oral health of children and adults. Key documents which summarise the existing evidence-base include 'Choosing Better Oral Health' (Department of Health, 2005) and 'Delivering Better Oral Health: an evidence-based toolkit for prevention' (Department of Health, 2009). Whilst the pilot incorporated approaches in line with these documents, future improvements could seek to develop wider collaboration with relevant stakeholders (e.g. leaders and helpers at nurseries, community groups, teachers, classroom assistants and local health visitors) to help to develop the

social capital of stakeholders and to reach beyond core NHS dental teams. As Davies and Bridgman (2011) have reported, past OHP approaches have tended to focus upon the education of school children in classroom environments which may not improve oral health if it is parents who control children's diets, oral hygiene practices and their access to dental services.

Future development of the pilot would aim to further involve parents and carers in the key messages linked to the appropriate use of fluoride toothpaste, professionally-administered fluoride varnish, dietary advice and tooth brushing supervision as practices in the pilot reported that they found engaging with parents the least successful aspect of their OHE work. Several practices reported engaging well with parents and their children at swimming lessons, but these families are likely to represent a relatively small proportion of the pilot's target population.

Learning Points

- Monitoring the types of OHE activity undertaken by dental practices is essential if evidence-based oral health messages are to be delivered to children and their carers.
- Formal training in OHE should be offered to all dental practices who wish to participate in this type of initiative in the future.
- Central purchasing of oral health teaching resources and dental consumables should be explored.
- Recurrent funding is required if the pilot is to truly fulfil its stated aims and objectives.

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