

Evidence summary: what is the effectiveness of alternative approaches for increasing dental attendance by poor families or families from deprived areas?

KEY TERMS

- **Deprived:** a characteristic of areas or households which denotes low socio-economic status or social deprivation.
- **Dental attendance:** a frequency or proportion visiting a dentist within a particular period; or attending the dentist within a given period; registration rate.
- **Families:** households with children and/or poor/deprived households in general.
- **Effective:** some increase in a measure of dental attendance (or proxy).

Original question submitted by Magdalene Kubianga, October 2009

Reviewer: Chris Fox¹

Information Scientist: Helen Nield

In September 2009, members of the newly redeveloped Primary Care Dentistry Research Forum (www.dentistryresearch.org) took part in an online vote to identify questions in day-to-day practice that they felt most needed to be answered with conclusive research. The question which received the most votes formed the subject of a critical appraisal of the relevant literature. Each month a new round of voting takes place to decide which further questions will be reviewed. Dental practitioners and dental care professionals are encouraged to take part in the voting and submit their own questions to be included in the vote by joining the website.

This paper details a summary of the findings of the second critical appraisal. In conclusion, the critical appraisal has identified that the most effective approaches for increasing dental attendance in families from deprived areas were the mobile dental unit at school premises and the dental access centre. The findings conclude that more high quality research is needed to determine the best ways to address the widely-acknowledged unmet treatment need of children and families in lower socioeconomic groups.

BACKGROUND

Socioeconomic factors are key determinants of oral health inequalities.¹ Children from low socioeconomic status families in the UK show higher caries prevalence, fewer caries-free teeth, fewer sealants and more untreated lesions.^{2,3} Regular dental attendance is associated with better oral health⁴ and quality of life (QoL).⁵ Fifty-nine percent of adults (1998)⁶ and 62% of children (8 years old, 2003)⁷ regularly attend the dentist, with 26% of the latter only attending when in trouble. Regular dental attendance is more prevalent in high socio-economic groups.^{8,9}

The Department of Health's Dental Access Programme¹⁰ aims to address perceived and actual barriers to NHS

dental care by 2011. The Steele Review¹¹ raises the prospect of a fundamental re-orientation of NHS dentistry to an oral health service. Future NHS primary care trust (PCT) commissioning of dental services may increasingly extend beyond the dental surgery, customised to meet local population need.¹²

AIM

This review aimed to identify and summarise primary research studies which evaluate the effectiveness of different approaches for increasing dental attendance by families from deprived areas in the UK.

REVIEW METHOD

Ovid MEDLINE was searched (1950 to week 4, September 2009) using the search terms 'attendance/health services accessibility' and 'socioeconomic factors/poverty/deprivation' combined with 'dentist'. The search was limited to dental journals and to the UK. One hundred and sixteen papers were identified and

110 excluded. Further searches included CEBD, Cochrane Oral Health Group, CRD, ADA and National Library for Public Health. Six of the studies reviewed either contained explicit change in service provision/approach targeting lower socioeconomic/deprived areas/areas with treatment need, or a more general attempt to increase use of dental services/registration by people who need care, but where the take up of the service from people of different socioeconomic backgrounds is reported. Literature searches were complemented by contact with the Department of Health Dental Access Programme.

FINDINGS

There was only one reported study relating to approaches used by traditional general dental practices to increase dental attendance. The studies found evaluated school dental screening,^{13,14} a health visitors and GPs collaborative,¹⁵ a mobile dental clinic on school premises as part of school dental screening,¹⁶ a dental health

Sponsored by the Shirley Glasstone Hughes Trust
¹PhD Student, Peninsula Dental School
 Correspondence to: Beth Caines, Shirley Glasstone Hughes Trust Fund Administrator, British Dental Association, 2 Caspian Point, Cardiff Bay, CF10 4DQ
 Email: b.caines@bda.org; Tel: +44 (0)29 2043 6184

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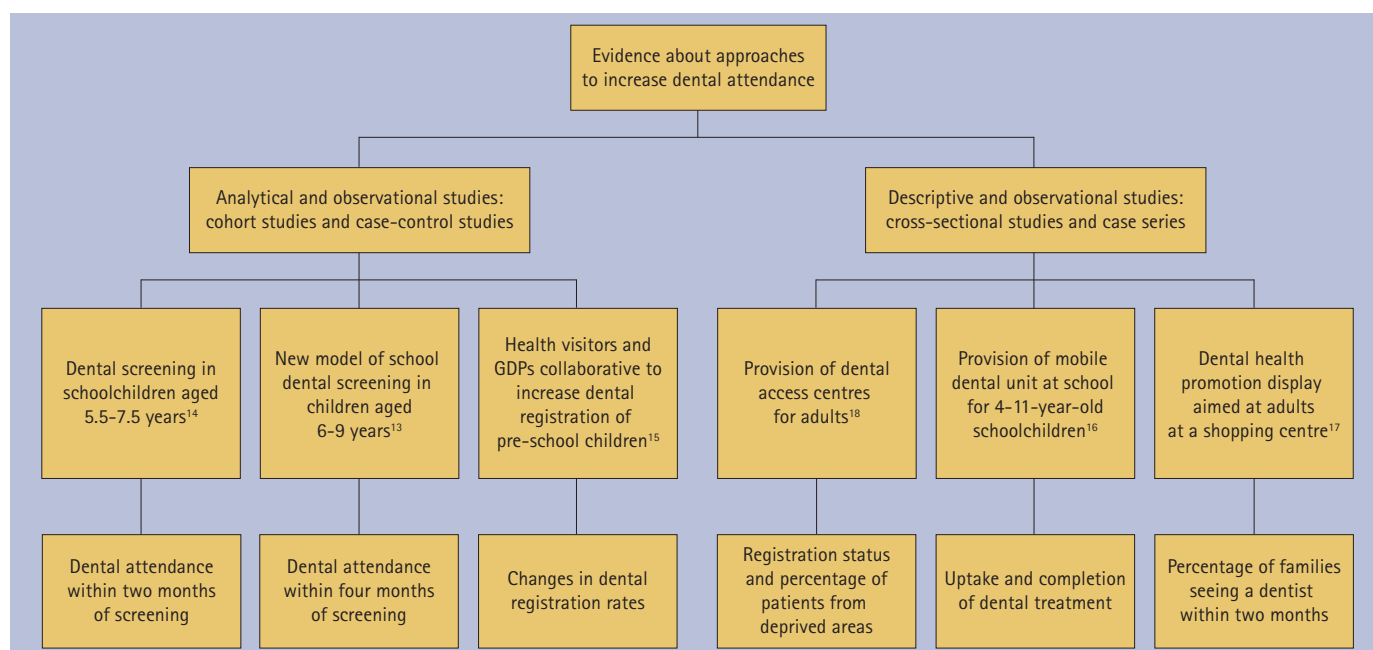


Fig. 1 A diagram showing the types of studies identified and their outcome measures

promotion display in a shopping centre¹⁷ and a dental access centre¹⁸ (Fig. 1).

Within these UK studies the quality of evidence was low, with observational approaches dominating and methodological or analytical limitations being identified in each study, weakening the conclusions made (Table 1).

Advice provided by health visitors to mothers of new infants in areas of high social deprivation led to a sustained increase in dental registration, although the effect did not extend to older pre-school children in the household. Three studies in children were all focused upon school dental screening. A 'new model' of dental screening with specific referral criteria led to reduced referral rates in both affluent and non-affluent children, but children with a high index of multiple deprivation (IMD) were more likely to be referred (23% *vs* 9%). Of those referred, high IMD children were less likely to attend (39% *vs* 62%) and were less likely to receive treatment for caries in permanent dentition (16% *vs* 34%).

In the second screening study, an increase in dental attendance was reported across all social classes in the intervention group (45% in intervention group *vs* 27% in control), and especially in the higher employed group.

The children-focused approach perceived in this review to be most effective in increasing acceptance of treatment,

attendance and completion of treatment was the use of a mobile dental unit in school grounds. Half of these primary school pupils from a deprived area had not previously seen a dentist. Testing the actual effectiveness of this approach would require a larger scale study.

Provision of a dental health display targeted at adults in the shopping centre serving a deprived area produced a statistically significant increase in the number of parents taking their children to the dentist.

Dental access centres (DACs) were found to provide treatment to more adults from a disadvantaged background (IMD mean score 38 *vs* 23) who were more likely to be smokers, to have worse oral health, to be more likely to attend only when in pain, to be less likely to view dental attendance as important, to be under 35 years old and to be dental charge-exempt.

In summary, the two approaches that appeared to be most effective in increasing dental attendance in families from deprived areas were the mobile dental unit at school premises and the dental access centre. Both responded to the particular attendance preferences of the populations served, which may have implications for PCT service commissioning. However, there is a need for more high quality research to determine the best ways to address the widely-acknowledged unmet treatment

need of children and families in lower socioeconomic groups.

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Table 1 Summary of the literature review findings

Ref	Year*	Study aim and design	Population	Intervention/ service change	Comparator	Summary of results	Authors' conclusions
18	2007	To examine the nature of patients attending different dental practices. A cross-sectional study to measure (by questionnaire and visual inspection of teeth), in two different practice settings: i. patients' dental health ii. patients' views about dental visiting preferences, and reported levels of anxiety about dental care.	A convenience sample of 215 adults attending either one of three dental access centres (DACs) in Halton & St Helens PCT and Warrington PCT, or one of three 'high street' general dental multi-surgery practices located within one mile of the DACs (patients presenting with severe pain, bleeding or trauma were excluded). 58 adult patients at the three DACs and 157 adult patients attending three 'high street' general dental practices were recruited on presentation to dental reception	Attendance at dental access centre.	Attendance at 'high street' general dental practice.	DAC patients , compared to attenders of 'high street' practices: 1. Were from a more disadvantaged background (mean IMD [†] score 38.8 vs 23.3) 2. Were three times more likely to be smokers (60% vs 19%) 3. Were more likely to attend a dentist only when in pain (48% vs 12%) 4. Were less likely to view regular attendance as very important (25% vs 45%) 5. Were less likely to have seen a dentist more than once in the last 12 months (44% vs 93%) 6. Were younger (55% vs 19% <35 years old) 7. Were more likely to be dental charge-exempt (41% vs 16%) 8. Had worse oral health (eg active cares 79% vs 33%) 9. Were twice as likely to have had toothache in the previous year (67% vs 31%) 10. Were more likely to be dentally anxious (50% vs 17%) 11. Were less likely to prefer to see the same dentist at each attendance (53% vs 80%) 12. Were less likely to rate their dental health as being good (15% vs 42%).	DACs offer treatment to a different patient population than neighbouring 'high street' practices.
15	2004	To evaluate the effectiveness of a community-based programme. A quasi-experimental non-equivalent two group comparison of Central Services Agency (CSA) monthly patient dental registrations in preschool children (0-2 and 3-5 years old groups).	Mothers of preschool children (number unspecified) in 23 purposively selected (lowest levels of preschool child dental registration and in the top 10% of the most deprived communities in Northern Ireland) rural and urban electoral wards in the greater Belfast area. Nine wards allocated to the intervention community-based programme and 14 wards in the control group.	A two-year collaborative intervention ('Treasure baby teeth') by 12 health visitors and 44 GDPs trained to promote dental registration and access to dental care by preschool children. Dental health registration, free resources and GDP dental registration vouchers given to mothers at three health visitors' baby development checks. GDPs offered preventive advice including how to reduce pain-only attendance and maintain registration. Welcome gift.	Usual service prior to new service.	Registration rates in 0-2-year-olds: 1. Statistically significant differences in the monthly registration rate at five months post-intervention between the intervention and control wards for the 0-2 year age group only (26% vs 22%) 2. During the two-year intervention, the rate of change in registration for 0-2-year-olds in the intervention wards was statistically significantly greater compared with the control wards (25% vs 22%) 3. Comparison of the registration rates pre- and post-intervention showed a significant increase (17% to 26%) for 0-2-year-olds living within the intervention area. Registration rates in 3-5-year-olds: 4. None of the above effects were seen in the 3-5 year age group.	The community-based, collaborative dental registration and access programme improved access to dental care for 0-2-year-olds in families residing in areas of high social deprivation.

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*Year of study where known, or publication date. †IMD = index of multiple deprivation.

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13	2006	<p>An observational prospective cohort study to determine dental attendance (by socioeconomic status) and treatment outcomes following two models of infant, primary and junior school dental screening.</p> <p>Matching of study data to identify children, screened by the two models, who attended the general dental service (GDS), personal dental service or community dental service within four months of being screened.</p>	<p>8,505 children aged 6-9 years attending 169 state maintained schools in Runcorn, Widnes, St Helens and Knowsley. 4,087 children were randomly allocated to a 'new model' of dental screening, and 4,418 to a 'traditional model' with referral triggered for screened-positive children.</p>	<p>'New model' of school dental screening. Screening dentists were trained and calibrated to an agreed set of clinical criteria, any of which would trigger referral. Criteria included caries to the permanent dentition, presence of sepsis, untreated trauma to permanent anterior teeth, presence of gross plaque or calculus. They excluded caries to the primary dentition.</p>	<p>The usual service of 'traditional model' dental screening. Children were referred if the dentist felt dental treatment was needed. Parents issued with a letter.</p>	<p>New model:</p> <ol style="list-style-type: none"> 1. A smaller number of children were referred using the new model (571 (14%) vs 1,208 (27%)) 2. Within the new model, 46% of referred and 41% of non-referred children attended the dentist 3. 303 children were referred by the new model screening due to caries in the permanent dentition; 133 of these attended a dentist. Of these attenders, 53% received treatment, most commonly restoration 4. Children referred using the new model were categorised by quintiles of IMD[†] by postcode. The children in the most affluent quintile were less likely to be referred than the children in the most deprived quintile (9% vs 23%). 5. Once referred, the children in the most affluent IMD quintile (as in 4 above) were more likely to attend than children in the most deprived quintile (62% vs 39%) 6. Children in the most affluent IMD quintile (as in 4 above) were twice as likely to receive treatment to the carious permanent teeth as those in the most deprived quintile (34% vs 16%). <p>Traditional model:</p> <ol style="list-style-type: none"> 7. Within the traditional model, 48% of referred and 39% of non-referred children attended the dentist within four months of screening. <p>Other:</p> <ol style="list-style-type: none"> 8. 81% of children attending due to referral for caries in permanent teeth went to GDS. 	<p>Two break down points in the screening programme: less than half of screened positive children attend the dentist; of these, less than one quarter receive appropriate treatment. The majority of study participants derived little benefit from the school dental programme in relation to dental attendance and treatment for carious permanent teeth. School dental screening does not resolve inequalities in dental disease and uptake of dental services. Further research needed to identify the barriers preventing screened positive children receiving treatment for caries in permanent dentition.</p>
14	2001	<p>To evaluate the effectiveness of the referral system in encouraging children across social class groups to attend their GDP. Also to examine other factors affecting children's dental attendance and their importance in relation to the screening outcome.</p> <p>A prospective comparative cohort study to establish dental caries levels in children with a positive school dental screening result.</p>	<p>64 schools, including 2,321 children aged 5.5-7.5 years in the Causeway Health & Social Services Trust, Northern Ireland. Stratified, blocked randomisation to equal-sized intervention and control groups. 980 children screened positive for untreated dental caries across both groups issued with a 17-item parental self-completion questionnaire for information on family social class grouping, the child's dental attendance and factors predictive of attendance (664 questionnaires completed, response rate 67%). Main outcome measure: reported GDP attendance in the two month period prior to issue of questionnaire.</p>	<p>Standard school dental screening. Screened positive children issued with a questionnaire two months later. 352 questionnaire responses obtained.</p>	<p>Delayed screening until after questionnaire completion to identify children with treatment need. 312 questionnaire responses obtained from those screened positive.</p>	<ol style="list-style-type: none"> 1. In the two months post-screening, 45% of the intervention group and 27% of the unscreened control group reported dental attendance 2. The intervention group's higher dental attendance (a 63% increase in the rate of attendance) was across all social class groups, with the biggest effect in the higher employed group (46% in intervention group vs 27% in control group) 3. Attendance outcome was associated with time since parents' last visit, parents' perception of child treatment need, child attending for regular checkups and screening. Social class was not significantly associated with attendance outcome 4. Among those lacking attendance/appointment the reported barriers included child fear of dental treatment (53%) and parent fear of dental treatment (17%) 5. Mean DMFT in intervention and control groups was 4.85, with no statistically significant variation between groups 6. A significant proportion of children with unmet dental needs were not accessing dental services. 	<p>School dental screening significantly improved dental attendance, although overall many children with unmet dental needs are not accessing dental services. Improved attendance occurred throughout the social classes, ie social class was a less useful predictor of dental attendance. School dental screening, along with a child's previous dental checkups and the time since the parents' last attendance, are the strongest predictors of dental attendance.</p>

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16	1988	A descriptive case study to compare children's uptake of dental treatment offered to a school in 1987 and delivered at a local community dental service clinic, with that in 1988 when a mobile dental clinic visited the school. Also to compare the type of treatment undertaken and the productivity achieved.	Purposive selection of total population, one whole primary school for children aged 4-11 years, in a fluoridated water area with a high proportion of residents born outside the UK and high levels of socio-economic groupings IV and V. In December 1987 all available children (n = 483) were examined under normal school inspection conditions, treatment offered where needed and acceptance forms distributed. In October 1988, the whole school inspection and correspondence process was repeated (n = 445).	129 children were offered treatment in a mobile dental unit sited at the school.	256 children were offered treatment at a 'fixed' community dental clinic within half a mile of the school.	<p>Children's attendance:</p> <ol style="list-style-type: none"> 1. More children accepted treatment in the mobile clinic than the fixed clinic (80% vs 43%) 2. Most children who accepted treatment completed their treatment at the mobile clinic, compared with few at the fixed clinic (91% vs 12%)[§] 3. Fewer children did not return treatment acceptance forms for treatment at the mobile clinic than the fixed clinic (14% vs 53%) 4. Half of children seen in the mobile clinic had not previously visited a dentist. <p>Other outcomes:</p> <ol style="list-style-type: none"> 5. Pattern of dental care: more fillings, less prophylaxis and no broken appointments per treatment hour in the mobile unit 6. Fewer patients seen, however more restorative work provided per treatment hour. 	Use of a mobile dental unit to provide treatment at a school with high ethnic minority population produced a marked increase in uptake and completion compared to a fixed clinic. Mobile units remove barriers to dental attendance such as travel to clinic, remembering the appointment, family circumstances.
17	1992	A study to assess the effectiveness of a dental display and competition in improving dental health knowledge and behaviour. A before and after study of a dental health promotion campaign organised by the community dental service (advice to prevent tooth decay, the advantages of dental registration, provision of leaflets, free product samples) in a deprived north Manchester shopping centre as part of National Smile Week 1992.	A random sample of 245 of the adult general population visiting the shopping centre were interviewed using a piloted short questionnaire about dental knowledge and their, or their children's dental attendance. 99 were interviewed one month before the campaign display and 146 were interviewed two months after the campaign display, using the same questions with one further question to ask if the display had been seen.	An information display about the advantages of being a registered patient and of receiving preventive advice, eg regular checkups and registering babies as early as possible. Participation in competitions: 1,042 participants in a 'safe snack' competition; also one for people not registered with a GDP, to stimulate registration through entry to a prize draw (n = 38).	Absence of dental display in shopping centre.	<p>Analyses based upon respondents up to and including 45 years old (n = 178).</p> <p>Children's dental attendance:</p> <ol style="list-style-type: none"> 1. A statistically significant increase in the number of parents taking all their children to the dentist (26% prior, 60% after seeing the display). <p>Other outcomes:</p> <ol style="list-style-type: none"> 2. In the 'safe snack' competition, there was a statistically significant increase in the correct answers about sweets (37% to 58%) and snacks (47% to 57%) before and after the display. However, the percentage of those who had not seen the display and answered correctly was similar to the percentage of those answering correctly prior to the display 3. A high level of 95% of respondents prior to the display, and 98% afterwards, correctly identified which of the options provided was a safe drink for teeth 4. No statistically significant differences in all measures were detected between those who were interviewed before the campaign and those who were interviewed after who had not seen the display. 	The display was an effective way of increasing knowledge and raising awareness of risk factors, however it was less effective at changing dental behaviour.

*Year of study where known, or publication date. †IMD = index of multiple deprivation.