Changes in dentists’ attitudes and practice in paediatric dentistry

D. ROSHAN, M.E.J. CURZON, C.G. FAIRPO

Abstract: Aim The purpose of the study was to determine if there had been any changes in the clinical practice and attitudes to the care of children by general dental practitioners over a ten year period from 1986 to 1996, following the introduction of a system of capitation payments in the United Kingdom. Methods A questionnaire was mailed to 1,290 general dental practitioners practicing in Yorkshire (UK) in an identical way to a previous survey ten years before. Practitioners were asked questions concerning their practice of dental caries prevention, behaviour management, restoration of primary teeth and pulp therapy. Responses were compared with the results of the 1986 survey. Results Of the total of 687 replies (53.2% response) 61% practiced, or said they practiced, diet evaluation and gave dietary advice. Oral hygiene instruction was reported by 87% and 57% used fissure sealants. The routine use of amalgam, previously 80%, had declined to 35% in favour of glass ionomer cements (57%). There had been a significant improvement in the use of pulp therapy for primary teeth at 35% compared with previous 3%. The use of rubber dam also increased, but only from 0% before to 9% in the present study. The usage of stainless steel crowns had changed from 2% over ten years to 8% and strip crowns from 1% to 5%. Conclusion The use of paediatric dental techniques by general dental practitioners had generally increased, particularly in preventive measures and pulp treatment. Restorative techniques had marginally changed, but a dramatic shift away from amalgam had occurred. There was still a very low usage of stainless steel crowns and rubber dam was also not used to the extent that it should be.

Keywords: Children, Dentistry, Clinical practice

Introduction

Despite the proportion of 5 year olds in England and Wales with caries reducing from 71% to 48% between 1973 and 1983 [Todd and Dodd, 1985], 45% were found to be affected in 1993 [O’Brien, 1993]. By 9 years of age, nearly 70% of children in England and 80% in Scotland and Northern Ireland have experienced caries in their primary teeth [Todd and Dodd, 1985]. More recently the Office of Population and Census Statistics of the UK Government found that 17% of 1.5 - 4.5 year olds had experienced dental caries and that most of this was untreated.

Most dental care and treatment for children is provided by general dental practitioners (GDPs) and to a lesser extent by Community Dental Officers (CDOs). A previous survey was carried out by Curzon et al. [1986] on the use of paedodontic techniques by GDPs and CDOs. Since this study was carried out, the method of paying the GDPs for treating children has changed from a “fee-per-item” system to a “capitation” system and then to a mixed fee-per-item plus capitation for prevention. GDPs were allowed to claim an initial entry payment when a child was accepted for treatment, but thereafter a monthly payment was given, irrespective of the treatment needs of the child. CDOs were, and still are, salaried and provide comprehensive dental care for school children and other special needs groups. The aim of this study was to investigate what changes had occurred in the practice of dental care for children by general dental practitioners since the original study in 1986.

Materials and methods

Questionnaires. All principals and associates working in general dental practice (GDPs) and dentists working in the Community Dental Service (CDOs) in Yorkshire were asked to take part in this study by responding to a questionnaire regarding the use of paediatric dental techniques.
techniques. The questionnaire was close ended consisting of 32 multiple choice questions and 6 general questions about the respondents. The questionnaires were mailed with a prestamped and addressed envelope to encourage their return. All questionnaires were anonymous and no reminders were sent. The questionnaire, which was virtually identical to that used in 1986, was designed to collect information on the practice of dental care for children. The focus was on several categories that encompassed the following aspects of dental care of children:

- preventive methods;
- behaviour management techniques;
- use of rubber dam in children;
- local analgesia;
- attitudes toward pulp treatment in children;
- materials used for the restoration of primary teeth.

In addition, questions were asked about respondents’ age, sex and year of graduation and qualification. The main questions and options given in the questionnaire are shown in Table 1. The questionnaire was validated in a pilot study with a convenience sample of 35 dentists at Leeds Dental Institute (postgraduate dental students and members of staff). Based on their suggestions the questionnaire was revised to use five scales for measuring the frequency of suggested response. The scales were determined as always (100%), mostly (75%), sometimes (50%), rarely (less than 25%), never (less than 5%). The questionnaires were then mailed to GDPs and CDOs and a period of six weeks was allowed for the return of the questionnaires. Those returned after the initiation of statistical analysis were discarded (8 questionnaires).

Data analysis. Data collected from the questionnaires were entered into a computer (SX 33 486), analysed using $\chi^2$ tests and then transferred to Works software for the printing of graphs and text.

Results

The questionnaire was sent to 1,290 GDPs and CDOs practicing in the county of Yorkshire, England. There were 687 (53.2%) replies returned (607 by GDPs and 80 by CDOs). Among the total respondents 72% were male and 28% female (ratio 2.6 to 1), with 88% GDPs and 12% CDOs. While among the GDPs 77% were male and 23% female, this ratio was different for CDOs, with 33% male and 67% female. As might be expected not all the respondents answered all the questions; therefore, in the following tables the percentages do not always add up to 100%. The mean age of the respondents was 39 years with a range of 24-69 years. Female respondents were significantly younger than males ($p<0.01$).

Prevention of dental caries. The responses to these questions are given in Table 2. Prenatal fluoride was never or rarely used by 95% of respondents, topical fluoride never or rarely by 57% and fluoride drops or tablets by 23%. Over 60% claimed to analyse their patients’ diets and give dietary advice with 88% giving oral hygiene instruction. A slight majority of dentists (57%) reported that they used fissure sealants. It appeared that CDOs used topical fluoride significantly more than GDPs ($p<0.01$), whereas GDPs used fluoride drops and tablets more than CDOs. Diet analysis and counseling, oral hygiene instruction and fissure sealants were used significantly more frequently by CDOs than GDPs ($p<0.001$).

Behaviour management. More than 94% of respondents said they used communicating behaviour management techniques in their practice. CDOs reported...
that they all mostly or always used communicating techniques. Relative analgesia (RA) was used by only 7.7% and mostly by 2% of respondents, reflecting no doubt the lack of training and availability of equipment. Oral sedation was rarely used if at all, by only 2.7% and 99% said they never used physical restraint, while only 4% used hypnosis. General anaesthesia (GA) was used on occasion by only 3%.

**Rubber dam.** It was reported to be used for restorative treatment generally by 9% of respondents, but for children’s dental treatment by only 5%. In both instances CDOs used rubber dam significantly more than GDPs (p<0.001).

**Local analgesia.** The use of local analgesia (LA) by GDPs had not change materially since the time of the previous survey. The use by GDPs was less than CDOs (Table 4). The results from the CDOs showed that they had increased their usage of LA as now 45% of them said they used the technique mostly compared with 38% previously.

**Pulp treatment on children.** Pulpotomies were reported as being carried out by 35% of the respondents and pulpectomies by only 15%. Root treatment of abscessed primary teeth, however, was claimed to be carried out by 27% of dentists. CDOs performed significantly more pulpotomies than GDPs (p<0.001) and females significantly more than males (p<0.001).

**Dental materials used for restoration of primary teeth.** Fifty six percent of respondents mostly or always used glass ionomer cement (GIC) for restoring primary teeth. By comparison, 33% used amalgam, 10% composite resin and less than 2% stainless steel crowns and strip crowns. CDOs used glass ionomer cements and amalgam significantly more than GDPs (p<0.001) (Table 3).

### Table 2 - Percentage of respondents using various methods of preventive dentistry in 1996 in Yorkshire.

<table>
<thead>
<tr>
<th>Technique</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Mostly</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prenatal fluoride</td>
<td>88 (95)</td>
<td>7 (4)</td>
<td>3 (1)</td>
<td>1 (0)</td>
<td>1 (0)</td>
</tr>
<tr>
<td>Fluoride drops/tablets</td>
<td>14 (0)</td>
<td>7 (12)</td>
<td>38 (52)</td>
<td>18 (24)</td>
<td>3 (10)</td>
</tr>
<tr>
<td>Diet counseling</td>
<td>2 (0)</td>
<td>9 (3)</td>
<td>27 (18)</td>
<td>39 (37)</td>
<td>23 (42)</td>
</tr>
<tr>
<td>OHI*</td>
<td>0 (0)</td>
<td>1 (0)</td>
<td>11 (5)</td>
<td>46 (19)</td>
<td>42 (76)</td>
</tr>
<tr>
<td>Fissure sealants</td>
<td>2 (0)</td>
<td>11 (3)</td>
<td>31 (16)</td>
<td>42 (39)</td>
<td>15 (43)</td>
</tr>
</tbody>
</table>

*Figure in brackets is for CDOs

*Oral hygiene instructions

### Table 3 - Percentage of general dental practitioners and community dental officers reporting the use of various behavioural techniques in their treatment of children in Yorkshire (UK).

<table>
<thead>
<tr>
<th>Technique</th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Mostly</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicating</td>
<td>2 (0)</td>
<td>1 (0)</td>
<td>4 (0)</td>
<td>37 (19)</td>
<td>57 (81)</td>
</tr>
<tr>
<td>Relative analgesia</td>
<td>77 (78)</td>
<td>12 (13)</td>
<td>8 (9)</td>
<td>2 (0)</td>
<td>&lt;1 (0)</td>
</tr>
<tr>
<td>Oral sedation</td>
<td>80 (81)</td>
<td>17 (17)</td>
<td>3 (&lt;2)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Restraint</td>
<td>91 (87)</td>
<td>9 (12)</td>
<td>&lt;1 (5)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>GA*</td>
<td>55 (60)</td>
<td>23 (28)</td>
<td>20 (22)</td>
<td>&lt;1 (&lt;1)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Hypnosis</td>
<td>88 (87)</td>
<td>8 (12)</td>
<td>4 (1)</td>
<td>&lt;1 (0)</td>
<td>&lt;1 (0)</td>
</tr>
</tbody>
</table>

*General anaesthesia

Figure in brackets is for CDOs

Note percentages have been rounded so that in some categories the responses was less than 1%
Discussion

The response rate for this survey (53%) was very similar to that achieved ten years before (57%). It cannot be assumed that this response rate is representative of the GDPs/CDOs in Yorkshire or of the country as a whole. However, it may be assumed that this response came from those who felt more responsibility towards the care of children in their practices. This means that the actual picture is probably not as good as represented here. There was no statistically significant difference in response rates between the two studies by age and gender of respondents or GDPs versus CDOs.

Although it is changing there have been few reference standards for the dental care of children. Certainly none were available in 1986 and very little at the time of the second survey. It was therefore not possible to compare the results of both surveys with what should be the standard of practice. In the future, with the advent of guidelines for the care of children it may be possible to determine what does happen compared with what should happen.

Fluoride. Due to a reported increase in prevalence of fluorosis in children in recent years [Pendrys and Stamm, 1990], the use of prenatal fluoride has not been recommended by most countries in Europe, including Britain, through various bodies such as the British Society of Paediatric Dentistry. The number of dental practitioners prescribing prenatal fluoride, as drops or tablets, in Yorkshire was now low, but still used by some of the older GDPs. Topical fluoride professionally applied may produce a 15 to 30% reduction in carious surfaces [Andlaw and Rock, 1996] and was used sometimes or always by 43% of respondents. Although this is an encouraging finding, it was still not thought to be satisfactory, bearing in mind that the aim of introducing capitation was to encourage a greater use of preventive techniques. Considering the very low level of fluoride in drinking water in Yorkshire, prescribing systemic fluoride in the forms of drops or tablets could be an effective means of caries prevention, especially in high risk children. The reason why GDPs reported prescribing fluoride tablets significantly more than CDOs may be attributed to the less time required for this compared with other forms of prevention. It might also reflect the long ‘time lag’ between changes in scientific knowledge and acceptance by GDPs as well as their age profile.

Diet analysis and counseling. Differences were found in comparing the results of diet analysis and counseling of the children’s diets between this study and a previous one by Blinkhorn [1981]. Diet counseling was claimed to be carried out mostly or...
always by 62% of the respondents in the present survey compared with 24% in Blinkhorn’s study. Considering the importance of diet analysis and counseling it is encouraging to see that more GDPs and CDOs are trying to deal with the root of this problem and not only with the symptoms (Table 3). As with many preventive measures, CDOs used diet analysis and counseling significantly more often than GDPs (p<0.001). This no doubt is a reflection of their greater ability to spend time with their child patients, as they are salaried. Capitation was expected to increase the interest of the GDPs in prevention and ensure that their children did not develop dental caries requiring restorations. However, prevention techniques, as reported in this survey, have not been universally implemented and this aspect of capitation has not succeeded.

**Oral hygiene instructions (OHI).** They were claimed to be given, mostly or always, by 88% of respondents although there is no means of knowing to what extent the oral hygiene instruction was given. Success mainly depends on the sincerity and interest shown by members of dental team. CDOs gave OHI significantly more often than GDPs, again due to a particular emphasis on preventive measures in community dental clinics. On the other hand, with 12% of dentists apparently not giving any OHI this is a disturbing finding.

**Fissure sealants.** They were claimed to be mostly or always used by 57% of respondents in this study, compared with 54% reported by Blinkhorn [1981]. It would appear that the increase expected following capitation has not occurred. More effort is needed to persuade GDPs to use this valuable preventive measure.

**Behaviour management.** While the great majority of dentists claimed to use communicating behaviour management for children, this question did not ask for any details (Table 3). It may well be that GDPs and CDOs were not familiar with the connotations to this question and interpreted it as ‘talking to children’. Curiously, 2% claimed they never used any of these techniques, which must imply they never talked to their children. The other techniques enquired about had only very low usage and were mostly used by CDOs, who may well have had additional training in the behaviour management of children. The use of nitrous oxide (RA) sedation was low, by both GDPs and CDOs, despite its proven suitability in reducing stress in children [Veerkamp et al., 1993; Arch et al., 2001]. This may well be because of the lack of equipment and the need for scavaging, all of which is expensive.

**Rubber dam.** Only 9% percent of respondents reported that they routinely used rubber dam for all patients and only 5% for children. Considering the advantages to its use [Duggal et al., 1998], these figures appear very depressing. It may be concluded that use of rubber dam for children is still not taken seriously in undergraduate teaching, as it should be, or it is perceived to be too time consuming for GDPs. The newer restorative materials, such as composite resins, glass ionomer cements and compomers, require excellent moisture control that can only be achieved with the use of rubber dam.

**Local analgesia.** Bearing in mind that pain control is essential in restorative treatment for children, as for all patients, the low use by GDPs is worrying. The levels reported here were very similar to those by Weerheijm et al. [2000] for Dutch GDPs. In that study 5% used LA mostly compared with the same percentage here. ‘Sometimes’ was reported as 40% for the Dutch and 43% in this study. Pain control has not been widely carried by GDPs for the care of children, seemingly in many parts of Europe.

**Pulp treatment for children.** Thirty five percent of respondents in this study claimed to perform pulpotomies in primary teeth when indicated. Only 15% of respondents reported that they performed pulpectomies in primary teeth, but surprisingly 27% claimed to perform root treatment of abscessed primary teeth. This does not seem logical because if 27% of respondents root treated abscessed primary teeth, then more than 15% of respondents must perform pulpotomies, of some sort, in primary teeth. However, some respondents may have been confused with the nomenclature in the questions or in question 3 they reported root treatment for abscessed permanent teeth rather than primary teeth. This possibility seems more appropriate.

**Dental restorative materials.** In this study amalgam appeared to be the second most popular filling material after glass ionomer cements, being used mostly or always by 33% of respondents in Yorkshire. Due to a massive propaganda campaign by the media against amalgam, parental requests due to health hazards and environmental reasons, a decline in its use may be expected. In the Dutch study [Weerheijm et al., 2000], the usage of amalgam was 49% compared with 30% (mostly) here. The decline in the use of amalgam for primary teeth seems widespread.

**Composite resins.** Aesthetic appearance is undoubtedly the most important justification for the use of composite resins. Although there is no hard evidence to show their reasonable long-term longevity, composite resins were reportedly used...
mostly or always by 10% of respondents in this study, although it is not clear if used for anterior or posterior teeth. The usage in Yorkshire was much lower (8%) than in the Dutch study (compomers 60%) [Weerheijm et al., 2000]. Compomers can be a valuable alternative for amalgam in primary teeth [Marks et al., 1999], but need to be placed under good moisture control.

**Stainless steel crowns (SSC).** These were reportedly used sometimes or always by only 8% of respondents in this study. It is very surprising that more practitioners are not prepared to use them, especially when it is more cost effective to restore a tooth only once. The usage was low in both the Yorkshire (8%) and Dutch (5%) studies, despite the reported very high success rates for this restoration in children compared multisurface amalgam restorations [Roberts and Sherriff, 1990; Papathanasiou et al., 1994].

**Strip crowns.** It was reported that these were used by only 4% of respondents in this study, although a very useful means in the reconstruction of severely carious or hypoplastic anterior primary teeth [Duggal et al., 1998]. This is especially so when the mesiodistal walls of teeth are affected as in cases of nursing bottle syndrome and less frequently traumatic injuries. However, it must be noted that due to parents’ reluctance in restoring primary teeth, and anterior teeth perceived as less important than posterior teeth, many are simply extracted. This is a pity as the aesthetic restoration of primary incisors can be beneficial to a young child’s self confidence.

**Glass ionomer cement.** In this study it appears to be the most widely used filling material for restoration of teeth and some clinical trials have indicated its use in primary teeth [Welbury et al., 1991]. Considering its great biocompatibility, ease of manipulation, cost effectiveness and possible release of fluoride [Nicholson and Croll, 1997], it may be concluded that it is gaining more popularity compared with all other restorative materials used for primary teeth. A comparison of the Yorkshire study with the Dutch study [Weerheijm et al., 2000] showed that 48% mostly used this material compared with 59% in the Netherlands.

**Overall assessment.** In general, while dental students are taught the necessary attitudes and techniques for the care of children, once in practice this seems to change. There are several possible reasons for this.

Firstly, not all GDPs are happy to care for children, but because they have ‘family practices’ feel that they have to see the children as well as the adults. They therefore reduce the dental care of children to a minimum.

Secondly, the myth that primary teeth are not important still persists within the GDPs community. This attitude is used as an escape to avoid the restoration of primary teeth.

Thirdly, as noted by Weerheijm et al. [2000], GDPs see treating children as strenuous and therefore they tend to postpone or avoid restorative treatments despite good intentions.

Fourthly, most young dentists, on qualifying, work in established practices and are influenced by the senior partner(s), who may well hold the attitudes noted above. The young dental practitioner may have to follow the treatment patterns established within the practice, and skills taught in dental school for dentistry for children are lost.

Finally, there is the question of costs. There is no reason why dental care, prevention or restorations for children should be paid for at a rate less than that for adults. Yet in virtually any system of payment studied, as in this case, restorations for children carry a significantly lower fee. Accordingly dentistry for children is perceived to be less remunerative than that for adults and, hence, to be avoided. It is only by continued education at the undergraduate and postgraduate level that these attitudes can be changed.

The use of capitation does not seem to increase the levels of dental care for children. In the case of this Yorkshire study it may be because the level of payment was low, representing an average office/surgery time of about 12 minutes per year. Studies such as that by Axelsson et al. [1993] showed that an effective capitation system, that provides comprehensive preventive and restorative care, averaged 53 minutes per child per year. On that basis a financially remunerative capitation fee must be equivalent to one hour gross income per child per year. No dental capitation system for children will succeed unless it is funded at a level that makes it worthwhile for GDPs.

**Conclusion**

It would appear that the use of paediatric dental techniques by general dental practitioners and community dental officers in the UK is satisfactory as regards preventive measures and pulp treatment of primary teeth, but is still lacking in the use of proper restorative techniques. Changes had occurred over a ten year period in the practice. This may be attributed to the introduction of capitation as well as other factors such as attitudes imparted during undergraduate teaching and continuous education programs for dental practitioners.
References


