

British Society of Paediatric Dentistry: a policy document on oral health care in preschool children

This policy document was prepared by Janet Rayner, Ruth Holt, Fiona Blinkhorn and Karen Duncan. Policy documents produced by BSPD represent a majority view, based on a consideration of currently available evidence. They are produced to provide guidance, with the clear intention that the policy be regularly reviewed and updated to take account of changing views and developments.

Introduction

The aim of this document is to provide advisory and practical guidelines for all dental personnel who are involved with the oral health care of children under the age of 5 years. Dental care for this group of children is not universally well provided. The issues to be addressed include oral health problems specifically affecting preschool children and the importance of advising parents on early dental attendance and registration of their children. The difficulties associated with the dental treatment of this group of children are outlined together with the provision of early preventive dental care.

Oral health care for the young child has potential to contribute to the wellbeing of both child and family. Care of the primary dentition should be considered as no less important than that of permanent teeth in maintaining aesthetics and function, preventing pain and sepsis and promoting wellbeing. It has an additional significance in protecting development of the permanent dentition and preventing malocclusion.

A wide range of oral health problems may be encountered in the very young child. These include minor cysts of the oral mucosa, which are often present at birth, difficulties with teething, and oral infections. Parents often report difficulties with teething and may attribute a wide variety of systemic upsets to teething.

Teething symptoms, which need to be distinguished from those of a concurrent infection or illness, may include irritability, disturbed sleep and cheek flushing. Tooth eruption itself is often preceded by a bluish swelling (eruption cyst) of the overlying gum which resolves as the tooth erupts and rarely requires intervention.

Trauma to primary teeth is typically seen in older preschool children who are learning to walk. Common injuries include luxation of the teeth and damage to hard tooth tissues. These require management that is appropriate for the age of the child and to the future function and development of primary and permanent dentitions.

Non-accidental injury or child physical abuse is also an important cause of orofacial trauma in young children. It is a problem that all dental personnel should be alert to and they should be familiar with established procedures in their areas set up to deal with it [1].

The two most prevalent oral health problems known to affect preschool children are caries and erosion. Erosion is thought to affect at least 19% of preschool children [2]. The presence of erosion in primary teeth is important in informing oral health advice but its impact on patients or on clinical care is not yet known and more traditionally attention has been focused on caries.

Caries and its sequelae continue to be the major oral health problem affecting children of this age. In a nationally based survey in Great Britain, 17% of 1½–4½ year olds were found to be affected by caries. Prevalence was lower in younger children with only 4% of 1½–2½ year olds being affected and increased with age, up to 30% in those aged 3½ to 4½ [2]. In the past, studies of preschool children were often confined to a single locality or city. In one area, results of repeated surveys showed improvements with time since the 1960s, with caries becoming less prevalent and less severe, but also indicated that these improvements had not been continued during the 1990s [3,4].

Rampant caries (which disease characteristically involves the smooth surfaces of maxillary incisor

teeth) affects a smaller but still significant proportion of young children. Exact estimates are difficult to establish but one estimate has suggested a prevalence as high as 20% in 3-year-old children in one area of England [5].

In young children, as in older age groups, caries varies in relation to region. In Great Britain, caries is more prevalent in Scotland than in England and in the North of England compared to London and the South-east [2]. There is also local variation in caries experience, which may be severe. The disease has also become increasingly polarized. Children especially at risk of severe caries include those from deprived areas, from lower social classes; families receiving income support; ethnic minority groups, particularly those of Asian origin and Muslim families where mothers do not speak English well [2,6,7].

Families living in disadvantaged circumstances may experience greater levels of stress, isolation and family conflict. Parents may have more feelings of powerlessness to achieve good oral health for their children. These factors may have an indirect effect on disease through their influence on diet and behaviour, for example, and must be taken into account if strategies for managing oral health care are to succeed.

No medical practitioner would knowingly leave disease in a patient untreated and certainly not in a young child [8]. Nevertheless, it is clear from findings of many studies that much of the caries experience of preschool children remains untreated. In a national survey, 83% of the average dmft was composed of untreated decay [2]. In some areas this finding may relate to lack of dental attendance among preschool children. In April to June 2000, registration rates for children aged 0–2 varied between seven per 100 local population in East London and the City of London to 41 per 100 in the West Pennine Health Authority in the North of England. For those aged 3–5 years, estimates ranged from 31 to 73 per hundred for East London and the City of London, and West Sussex, respectively [9]. Even these estimates may be optimistic, as dental attendance may not necessarily follow registration [10].

Not all dentists may encourage registration of young children, particularly those with high disease levels. They may also fail to provide effective treatment for those preschool children who do attend. Systems of payment for services for child patients and/or lack of funding to encourage treatment may have been a barrier in some cases but the continuing failure to provide treatment for caries in primary

teeth in preschool children may be a more fundamental problem [10].

Where treatment has not been provided it is often too late to avoid radical action that may involve extractions under general anaesthesia, which may be used as an emergency measure. This procedure may be traumatic for both child and family and is unlikely to encourage favourable attitudes toward future care. However, general anaesthetic used simply for extractions allows immediate relief of pain and sepsis. When well-managed and used for more extensive or time-consuming procedures in specialist units, it is also of particular value in providing effective, comprehensive treatment involving restorations and extractions for young children at a single visit. Whilst access to services providing dental treatment under general anaesthetic needs to be maintained for some children it should be regarded as a method to be used only when alternative methods of behaviour management are not feasible. Other methods involving sedation should be tried first wherever possible. The risk of mortality from general anaesthesia remains and every move to increase safety of this technique should be welcomed [11].

Early detection of disease allows institution of aggressive preventive care. Screening of oral health in young children should form part of routine health screening checks in preschool children, particularly in areas of high deprivation.

Dental attendance

The National Diet and Nutrition Survey of children aged 1½–4½ [2] has shown that dental attendance patterns vary with age, social class, and the educational qualifications and dental attendance patterns of the mother. Preschool children of all ages were more likely to be taken to the dentist if they came from non-manual households; their mothers had secondary education qualifications and were themselves regular dental attenders.

Dental manpower levels, distribution and funding should be equitable and allow all preschool children an annual check-up as well as permitting more frequent visits and treatment for those who need more active care. Utilization of therapists and hygienists in services providing care for children will be important if this goal is to be achieved.

Preschool children by the very nature of their age need to be taken to the dentist by their mother or daytime carer. Most mothers readily attend medical

centres for immunization programmes or when their children are sick. They should be made aware of the importance of registering young children with a dentist ideally before or as soon as their children's teeth erupt. Teething can be a stressful time and mothers may often seek advice and reassurance from dental personnel at this time. This is an ideal time to provide dental health education including early advice on caries prevention.

Dietary patterns and tooth brushing habits together with other health habits are becoming firmly established at the preschool age. Poor dental behaviours established at this age may be very difficult to change.

Liaising with other health care professionals such as health visitors should be encouraged as a means of providing home-based dental health education and to encourage early attendance and registration. A dentist visiting parents at home is not cost effective [12] but health visitors have ready access to mothers with young children and would be an appropriate group to collaborate with, especially to target areas of greatest need.

Regular home visits by trained Dental Health Promoters providing dental health education to mothers of young children has been shown to be effective in improving dental attendance but are again an expensive option, perhaps best suited to children in special need [13].

Dental treatment

The Child Dental Health Survey [14] showed that many children have untreated caries present at the age of 5 years. The levelling off of caries experience seen in the older population has not been seen in the 5 years olds who have shown a substantial increase in caries during the previous 2½ years [15].

The delivery of treatment to preschool children is governed by a number of factors.

These include:

- Availability of care
- Attendance of the child
- Geographical considerations (access and availability of transport to the surgery)
- Presenting symptoms
- Operator's clinical decision regarding the need for treatment
- Compliance of the child
- Cost-effectiveness of treatment

Professions complementary to dentistry (PCD) are currently under-utilized in the treatment of children in the UK. In other countries, dental therapists are allowed to work under 'remote supervision' (Western Australia) and carry out a larger proportion of treatment for children than dentists, as they provide a more cost-effective workforce [16]. Within the UK, PCD should be core members of all dental teams with remit to deliver preventive care to high-risk caries groups. With careful planning, they could supplement the work of practitioners in areas of dental need. Recent changes in United Kingdom legislation that allows the employment of therapists in general dental practice carry great potential in this context.

Treatment planning

Many preschool children with caries may present initially with a history of pain and sepsis. This may affect the treatment options, but should not influence the desired treatment outcomes. These should be to render the child pain-free and with an aesthetic functional dentition. Treatment planning should include the use of radiographs especially if general anaesthesia (GA) is required. Taking bitewing radiographs in preschool children is not easy but should be attempted for a comprehensive caries assessment. Although less accurate, an alternative is to use a lateral oblique or bimolar view. The child should at the very least have all carious cavities excavated and temporarily restored and caries activity stabilized before more permanent restorations are placed.

Provision of dentures may be considered in children whose anterior teeth have been lost prematurely and for whom this is producing social stigma.

The choice of technique will be governed by the age and understanding of the child. Non-pharmacological behaviour management techniques should be employed initially.

A suggested method of approach to treatment options is shown in Fig. 1.

Difficulties with compliance or the degree of caries present may necessitate the use of pharmacological techniques. Inhalation sedation using nitrous oxide and oxygen requires a level of understanding and co-operation from the child and is of limited benefit in the management of preschool children. Recent work [17] has demonstrated the successful use of intranasal sedation for treatment of anxious uncooperative children.

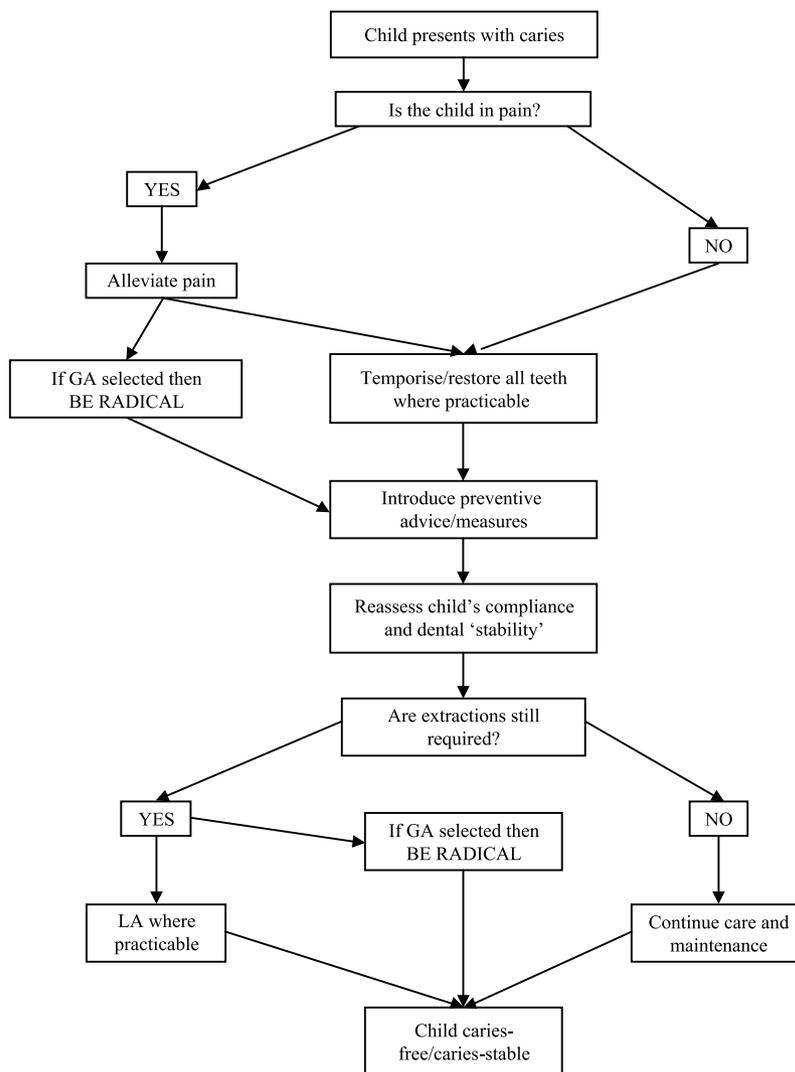


Fig. 1. A pathway for decision making in treatment of a child with caries.

Treatment under a general anaesthetic should be the last regime to be considered. However there is clear evidence that a radical approach to extraction planning should be adopted when general anaesthesia is used as this will prevent the need for repeat general anaesthetics in the future 2000 [18].

Prevention

Dietary advice

Dietary counselling can be given by all members of the dental team; however, it should be ensured that all personnel give the same advice. It is important to remember that information given should be personal, practical, positive and tailored to individual family needs and capabilities.

Key messages to impart in order to prevent dental caries in young children are:

- Breast or infant formula should be the main drink up to 12 months.
- Breast and bottle-feeding should be phased out after 12 months. Bottle-feeding after 12 months is inadvisable as it encourages continued and unnecessary comfort sucking and also disturbs the transition to a normal adult tongue back swallowing pattern, which the child learns when using a cup.
- Cool, boiled water is the safest drink between meals. If it is preferred well-diluted fruit juice can be given at main mealtimes, in a feeder cup or beaker, from the age of six months. Drinks high in sugars including many infant and baby drinks and tea with added sugar, can encourage a 'sweet

tooth' and should be given only occasionally, if at all, and confined to main mealtimes.

- Drinks other than milk or water should not be given in a bottle and should be confined to mealtimes. They should not be given at bedtime or naptime.
- Never use drinks, syrups, jams or honey on a dummy or as a comforter.
- Weaning, the transition from giving milk to family foods, should start between four to six months. Good weaning foods and drinks should be free or very low in sugar. Good foods include non-wheat cereals, e.g. unsweetened rice, cereals, purees of vegetables and non-citrus fruits. Sugar, fruit syrups or concentrates, honey or salt should not be added to weaning foods.
- Sugar-free finger foods should be introduced between 6 and 9 months to encourage chewing, e.g. toast or breadsticks and vegetables.

Sugar-free medicines

Many liquid oral medicines contain large amounts of sugar. Most children's medicines are available in sugar-free forms. Evidence shows that children who take sugar-containing medicines over 6 months or more have more dental caries than those who take sugar-free versions. Doctors and dentists can prescribe sugar-free versions by writing 'SF' at the end of the prescription. Until it is routine for all children's medicines to be sugar free parents should be advised to ask their doctors to prescribe sugar-free medicine and to ask the pharmacist for a sugar-free version of any over-the-counter medicine [19].

Tooth brushing

Parents should be encouraged to start brushing their baby's teeth with a fluoride toothpaste as soon as the teeth erupt. Parents should be advised to brush twice a day and especially last thing at night. This establishes the practice as a habit and gives the teeth the benefit of fluoride protection from the beginning. Parents should be advised to use a small-headed, baby toothbrush and a small smear of fluoride toothpaste. Parents should appreciate that they need to brush their child's teeth, as children do not have the manual skills to do this properly for themselves. The parents also need to supervise the amount of toothpaste used.

In order to reduce the risk of children less than 6 years developing enamel opacities in their perma-

nent teeth the BSPD recommends the following concentrations of fluoride toothpaste:

- 600 ppm for children considered to be at low risk of developing caries
- 1000 ppm (standard toothpaste) for children at higher risk

Children over the age of 6 years should be advised to use a standard 1000 ppm toothpaste or higher 1450 ppm if considered at risk of developing caries [20].

Fluoride supplements

Fluoride supplements should be prescribed only to children who are considered to be high risk and where the water supplies contain less than 0.3 ppm fluoride [20]. They should not be used as a public health measure and only after discussing risks and benefits with parents and used as a 'temporary' measure only when the individual child is at risk.

The BSPD recommended dosage schedule [20] is given in Table 1.

Fluoride supplements are particularly beneficial to children whose:

- Primary teeth have developed dental caries.
- Siblings have dental caries experience.
- General health is at risk from dental disease or its treatment, e.g., children with cardiac lesions, haemophilia or immunocompromised.
- Disability means they have difficulty in accepting dental treatment, e.g., children with a learning or physical disability [20].

The use of fluoride mouthwash is contraindicated in young children due to their inability to expectorate.

Oral health promotion

The goal of oral health promotion is the adoption of appropriate dental health habits as socially acceptable behaviour, the development of knowledge, skills, and the creation of supportive environments. Environmental and social factors play a dominant role in the adoption of these dental habits

Table 1. BSPD recommended dosage schedule.

Age	mg F per day
6 months up to 3 years	0.25
3 up to 6 years	0.50
6 years and over	1.00

F = Fluoride.

and it is much easier to facilitate the adoption of these habits in early life than try to change detrimental oral health behaviours later in a child's development [21].

If the correct messages are given at an early age, and acted upon, dental disease can be prevented. All too often children are taken to the dentist for the first time when the only option is extraction of teeth, this is not usually a good time for issuing preventive advice as it is a distressing time for the family and any messages given are unlikely to be retained. A review appointment following extractions can provide an opportunity to give preventive advice to parents to benefit other children in the family.

Dummy and digit sucking is common in preschool children [22] and parents should be advised of the dental disturbances which can occur if the habits are prolonged.

Dental professionals should seize all opportunities to involve other health care professionals in the promotion of oral health. Health visitors and nursery and playgroup staff are ideally placed to impart key messages to parents and carers and develop healthy eating habits in young children.

Recommendations

- Mothers should be encouraged to register their children with a dentist before the child's teeth erupt.
- Mothers should be given preventive advice including oral hygiene advice when their children are teething. The advice should include the prevention of dental erosion as well as the prevention of dental caries.
- If clinicians feel unable to carry out dental treatment for preschool children they should refer them to a specialist or a clinician who will undertake treatment before caries becomes out of control.
- There is a need for an increase in the number of dental therapists within the GDS. They are now permitted to work in General Dental Practice. This change could result in increasing registration and dental care for preschool children provided that the emphasis on care for children in therapist training is retained.
- A realistic and often radical treatment plan should be adopted for every preschool child who needs extractions under general anaesthesia in order to avoid a second anaesthetic in the future.

- Collaboration with other health professionals trained in oral health promotion, who have early and close contact with preschool children such as health visitors, would be appropriate especially in areas of greatest need. There needs to be an evidence-based dental input included in the training of all health professionals to ensure that non-conflicting dental advice is disseminated.
- Further research is needed into the delivery of restorative care for these children, including the use of different sedative techniques
- Oral health and treatment of disease in preschool children impacts on their parents and families. Treatment strategies therefore need to take into account the cost of care in terms of time and resources and its perceived benefits.

References

- 1 Welbury RR. *Paediatric Dentistry*, 2nd edn. Oxford: Oxford University Press, 2001.
- 2 Hinds K, Gregory JR. *National Diet and Nutrition Survey. Children Aged 1½ to 4½ Years*, Vol. 2. Report of the dental survey. London: HMSO, 1995.
- 3 Holt RD. Caries in the pre-school child: British trends. *Journal of Dentistry* 1990; **18**: 296–299.
- 4 Holt RD, Winter GB, Downer MC, Winter GB, Hay I, Bellis W. A fourth study of caries in pre-school children in Camden. *British Dental Journal* 1996; **181**: 405–410.
- 5 Hamilton FA, Hawley GM. The National Health Service, the Health Education Authority and the voluntary sector working together to improve the dental health of young children. *International Journal of Health Promotion and Education* 1998; **36**: 102.
- 6 Hamilton FA, Davies KE, Blinkhorn AS. An oral health programme for nursing caries. *International Journal of Paediatric Dentistry* 1999; **6**: 195–200.
- 7 Bedi R, Lewsey J, Gilthorpe MS. Changes in oral health over ten years amongst UK children aged 4–5 years living in a deprived multi-ethnic area. *British Dental Journal* 2000; **189**: 88–92.
- 8 Curzon MEJ, Pollard MA. Do we still care about children's teeth? *British Dental Journal* 1997; **182**: 243–244.
- 9 Dental Practice Board. GDS Quarterly Statistics: Registrations April–June 2000. *Dental Practice Board* 2000.
- 10 Tickle M, Williams M, Jenner T, Blinkhorn A. The effects of socio-economic status and dental attendance on dental caries experience, and treatment patterns in 5-year-old children. *British Dental Journal* 1999; **186**: 135–137.
- 11 Department of Health. *A conscious decision. A Review of the Use of General Anaesthesia and Conscious Sedation in Primary Dental Care*. London: Department of Health, 2000.
- 12 Rayner JA. *A dental health education programme for nursery school children*. PhD Thesis. Edinburgh: University of Edinburgh, 1990.
- 13 Kowash MB, Pinfield A, Smith J, Curzon ME. Effectiveness on oral health of a long-term health education programme for mothers with young children. *British Dental Journal* 2000; **188**: 201–205.

- 14 O'Brian M. *Children's Dental Health in the United Kingdom 1993*. London: Office of Population Consensus and Surveys, 1994.
- 15 Duncan K. *Factors associated with dental disease and development in preschool children*. PhD Thesis. Bristol: University of Bristol, 2000.
- 16 Riordan PJ. Can organised dental care for children be both good and cheap? *Community Dentistry and Epidemiology* 1997; **25**: 119–125.
- 17 Al-Rakaf H, Bello L, Turkustani A, Adenubi JO. Intranasal midazolam in conscious sedation of young paediatric dental patients. *International Journal of Paediatric Dentistry* 2001; **11**: 33–40.
- 18 Harrison M, Nutting L. Repeat general anaesthesia for paediatric dentistry. *British Dental Journal* 2000; **189** (1): 37–39.
- 19 Hall DMB. *Health for All Children*, 3rd edn. Oxford: Oxford University Press, 1996.
- 20 British Society of Paediatric Dentistry Policy Document. Fluoride dietary supplements and fluoride toothpastes for children. *International Journal of Paediatric Dentistry* 1996; **6**: 139–142.
- 21 Schou L, Blinkhorn AS. *Oral Health Promotion*. Oxford: Oxford University Press, 1993.
- 22 Levine RS. Briefing paper: Oral aspects of dummy and digit sucking. *British Dental Journal* 1999; **186**: 108.