The role of dental hygienists and therapists in paediatric oral healthcare in Scotland

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illustrate dental hygienists' and therapists' commitment and enthusiasm for greater involvement in the challenging field of paediatric oral healthcare.

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Abstract

Introduction The scope of practice of qualified dental hygienists and therapists allows them to undertake non-surgical periodontal screening, treatment and preventive care, and to diagnose and treatment plan. Therapists are also qualified to restore primary and secondary teeth, and to extract primary teeth. Both professions may see patients directly without needing a dentist's referral. In Scotland, they operate in a context of relatively poor but improving child oral health.

Aim To investigate provision of dental care to children, including challenges encountered, by dental hygienists and therapists in the Scottish General Dental Service (GDS).

Method An online survey of Scotland-based, GDC-registered dental hygienists and therapists in the GDS.

Results Of 426 potential respondents, 194 (46%) responded, including 113 hygienists. Thirty hygienists and six therapists did not currently see child patients. Lack of referrals from dentists/specialisation by other team members, financial/contract reasons and lack of demand were the reasons given. Of those who did see children, most were therapists. Responsibility for preventive paediatric care was evenly split, with 71 (46%) citing the hygienist or therapist and 69 (45%) the dentist. Sixty-five (43%) reported barriers, most commonly relating to parents and children themselves. Time pressures, cost implications for practice and parents, and a number of practice and regulatory barriers were also mentioned.

Discussion The response rate is considered to be very good. Limiting factors regarding provision of paediatric dental care include

lack of referrals from GDPs and financial or contractual issues.

Conclusion There appears to be considerable underuse of hygienists and therapists in respect to paediatric dental care.

Introduction

Historically, paediatric dental health in Scotland has been poor. According to the 2003 National Dental Inspection Programme (NDIP) report, 55% of Scottish primary 1 children had 'obvious decay experience', a similar proportion to that recorded in the eight NDIP surveys over the previous 15 years.[1] Children in the 2003 survey who had experienced dental decay had an average of five affected teeth. The Scottish Executive's response was to set up a programme to improve the oral health of children in Scotland, and to reduce inequalities in dental health and access to services.[2] The Childsmile programme began in 2006, although its geographical and functional roll-out was spread over a number of years. By 2014, the proportion of five-year-old schoolchildren in Scotland with 'obvious decay experience' in their primary teeth had fallen to 32%. The mean number of affected teeth in these children was 4.0.[3] The equivalent figures for England and Wales at that time were 31% and 3.4 affected teeth.[4]

Dental hygienists, as well as screening for oral disease, are able to undertake all aspects of non-surgical periodontal treatment and preventive care for patients of all ages, and to diagnose and treatment plan. Dental hygienist-therapists are also qualified to provide all direct restorations in the primary and secondary dentition and to extract primary teeth within their scope of practice. Since 2013, they have been able to see patients directly without a referral from a dentist, following the conclusion of the 1993 Nuffield Report, *Education and Training of Personnel Auxiliary to Dentistry*, that oral health needs of the population could be met by a variety of professionals, including hygienists and therapists, each possessing specific skills.[5,6]

In 2015, the Scottish Dental Needs Assessment Programme (SDNAP) working group decided to review the current provision of dental care to children across Scotland and identify gaps in the service, and to highlight difficulties experienced by service providers and patients. The aim of the current study was to investigate the experiences and perceptions of dental hygienists and therapists working within the Scottish General Dental Service (GDS) regarding the provision of dental care to children and any challenges they encountered in this work. A second SDNAP study, using the same methodology, was conducted in 2019 and focused on the oral health of older people.

Method

An online survey was conducted among Scotland-based, GDC-registered dental hygienists and therapists employed in the GDS. The list of names, qualifications and e-mails of all GDC-registered dental care professionals was obtained from the GDC under strict conditions of confidentiality and use, detailed in a licensing agreement signed 9 November 2015. The West of Scotland Research Ethics Committee assessed the need for ethical approval for the overall SDNAP review of children's services, of which the survey formed part. Their response was that NHS Research Ethics Committee approval was not required as the project was considered to be service evaluation and not research. Would-be respondents were informed that any information they gave would remain confidential to the research team and that no individual or practice would be identifiable in any report.

An initial screening e-mail asked if the individual did not work in the GDS. The survey then took place between 6 January and 1 March 2016 using online survey software accessed through the University of Edinburgh. Reminders were sent on 2 and 15 February 2016. The results file was transferred to an SPSS v24 file for analysis, enabling comments to be sub-coded thematically and related to the qualification, background etc of the respondent. Responses by qualification as hygienist or therapist were tested using the two-tailed chi-square test of significance, with $p < 0.05$. Please see online supplementary information for the full list of survey comments by question and response.

Results

Twenty-five respondents indicated at the onset that they did not work in the GDS: 15 worked in the community service; six in the Hospital Dental Service, three in the Armed Forces and one was undertaking full-time study. It is likely that a number of non-respondents were similarly ineligible because they did not work in the GDS. The response of 194 from 426 eligible clinicians represents 46%, and included 113 (58%) hygienists, 78 (40%) hygienist-therapists and three (2%) singly qualified therapists. Seventy-six (39%) also had other qualifications, mostly in dental nursing. Eighty-two (43%) said they worked in all private or mostly private practices, 56 (28%) said their practices were 50/50 private and NHS, and 61 (31%) said their practices were mainly or all NHS. Thirteen (7%) also worked in the community service, 11 (6%) in hospital, four (2%) in the corporate sector and five (3%) in other settings.

Paediatric care

Thirty-six (19%) said they did not currently see child patients – 30 hygienists and 6 therapists. This difference was statistically significant ($X^2 = 13.95$, $p = 0.001$). Of the 36, 32 explained why they did not see children. Their comments fall into three categories; examples of each are given.

Lack of referrals from dentists/specialisation by other team members (19)

- 'I do not get referred them. One practice has a dedicated children's dentist'
- 'Not referred any by employers. Very few referred to me. Most patients I treat have periodontal issues'
- 'I see patients privately and the principal treats children under 18 on the NHS. So, any perio/OHI/TBI [tooth brushing instruction]/diet advice is done by my principal'
- 'Rarely referred them we have a Childsmile nurse and the dentist do [sic] any work needed to be carried out'.

'Dental hygienists, as well as screening for oral disease, are able to undertake all aspects of non-surgical periodontal treatment for patients of all ages… '

Financial/contract reasons (7)

- 'Mainly private practice. Dentist treat [sic] NHS patients and refer private patients to hygienist'
- 'Dentist does not pass patients to me. She doesn't think therapists are properly

Fig. 1 Percentage of dental hygienists and therapists reporting routinely providing certain treatments for child patients (n = 152)

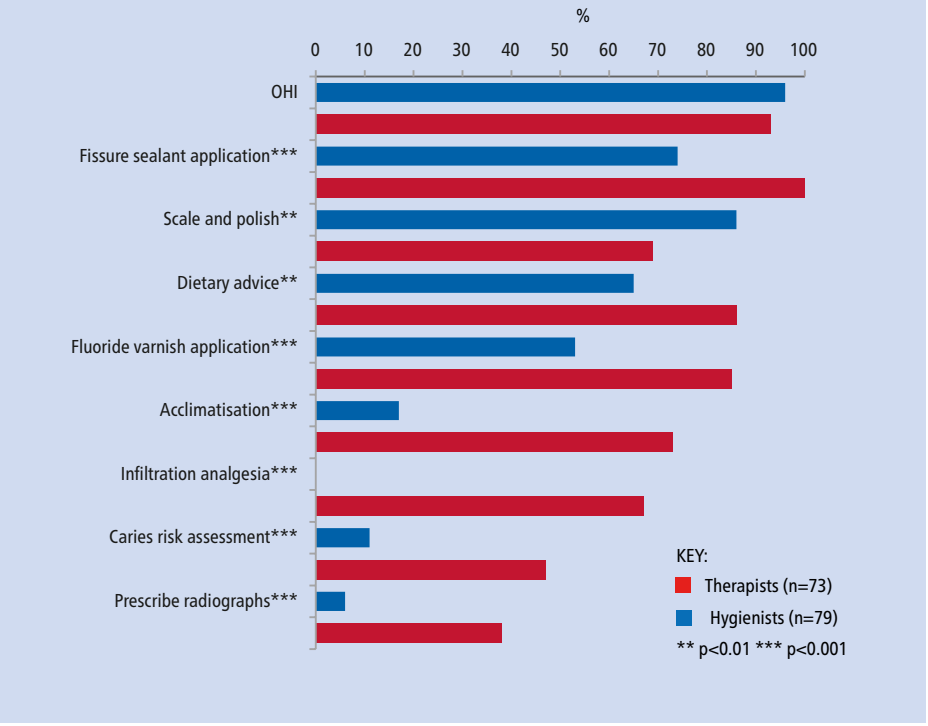
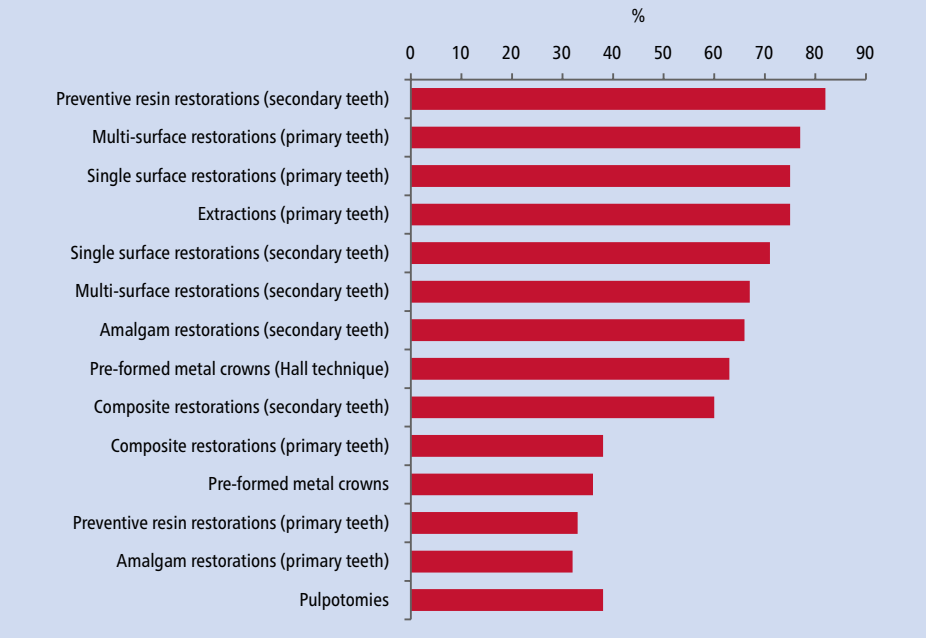


Fig. 2 Percentage of therapists reporting routinely providing certain treatments for child patients (n = 73)



trained and passes a lot to VT dentist as doesn't have to pay me'

- 'I presume it's due to costs. Seeing children and paying a dental hygienist is not cost-effective for dentist. I am so disappointed as trained on prevention of caries and perio disease but now only treat perio problems. Have not seen any children for [ages]'.

No demand (6)

- 'The children that attend the practice generally are good with their [oral health]'
- 'Fully private implant and periodontal care. No child patients seen in the practice'
- 'Hygienist appointments are private so very rarely see children'.

When asked who undertook preventive care with children in their practice, 71 (46%) said the hygienist or therapist and 69 (45%) said the dentist. With regards to restorative care, the figures were 56 (36%) and 96 (62%), respectively. The 158 (81%) who saw child patients were asked what types of treatment they undertook with children. Figure 1 shows treatments within the clinical remit of both groups. Figure 2 shows treatments within the clinical remit of dually qualified hygienist-therapists only.

Limitations on treatments undertaken

Forty-seven (30%) said some procedures were not referred to them even though they were within their scope of practice. Treatments specified were: fissure sealant application (15), fluoride varnish application (7), radiographs (5), restorations (4), pulpotomies (4), preformed metal crowns (3), extractions (3), impressions (2), oral health instruction (OHI) (2), and scaling and polishing (1). In addition, 10 (5%) said they themselves chose not to undertake certain child treatments: pulpotomies (4), restorations (2), whitening (2), fissure sealants (1), and scale and polish (1). Reasons why specific treatments were not referred to them fall into six groups (Fig. 3).

Financial reasons (11)

- 'Dentist diaries have sufficient space to not require these treatments to be carried out by myself routinely. As the dentists work as associates they would prefer to claim the fee for themselves'
- 'Probably because it takes time out my book & dentist doesn't get fee for it'
- 'Don't think the dentists get a fee for referring children to me so hardly see any now'
- 'The dentists would rather I was doing scalings to make the practice more money'.

Dentists' preference (10)

- 'Extractions are preferred by dentist [sic] in the practice'
- 'Dentist tend to complete these treatments themselves [sic]'
- 'Dentist prefers to do themselves [sic]'
- 'Sometimes they say it is to do with control and knowing what the condition of the cavity was before filling. Both terrible excuses'.

Convenience – eg done together with exam/other treatment/by other clinicians (9)

- 'Dentist chooses to perform this procedure as majority are carried out at check-up appt with dentist'
- 'Dentist takes req radiographs'
- 'The dentist claims acclimatisation in the

dentist's surgery'
- 'Childsmile dentist and nurse do this'.

Dentist unfamiliar with dental therapist's role (4)
- 'Dentists unaware of the scope of practice of a therapist'
- 'I work with foreign dentists who haven't used them'
- 'Dentist doesn't see the point of restoring primary teeth'
- 'The dentists aren't good at referrals for them so I generally only ask if I suspect carious permanent teeth or missing permanent teeth which is rare'.

No nurse support/adequate equipment (3)
- 'Dentists prefer [as initially didn't have a nurse]'
- 'I don't have a light for curing and my surgery is not laid out in a way that I can do this treatment myself as I work without a nurse'.

Other reasons (8)
- 'Dentist's referral is more targeted at restoring a cavity instead of alternative treatments such as PMC [preformed metal crowns]'
- 'Possibly due to...relatively new to practice where I currently work 2 days (started 3 weeks ago)'
- 'I see patients privately – do not see many NHS patients'
- 'Most parents opt for private composites. All private cons [composites] carried out by dentists'
- 'I am very busy and see very few children the dentists have quieter books so undertake preventative treatment themselves'.

Fig. 3 Reasons given as to why treatments are not referred (n = 45)

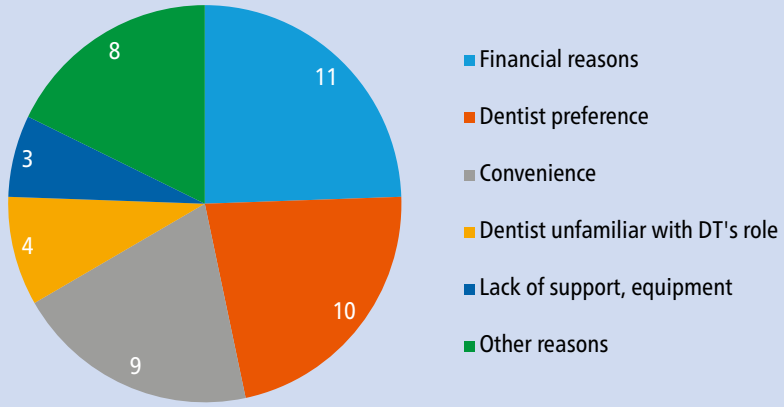
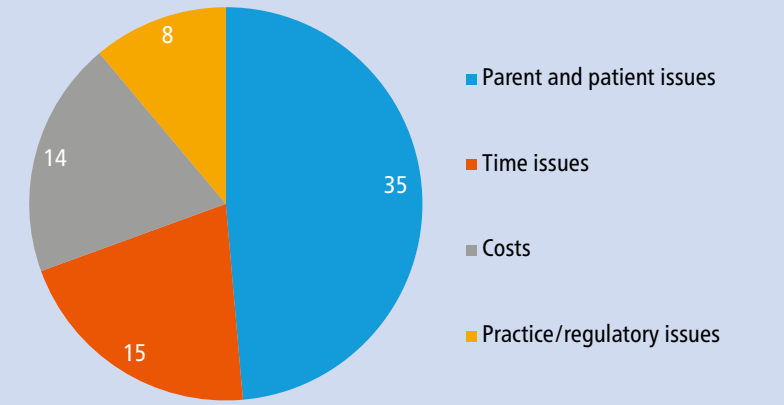


Fig. 4 Barriers to paediatric dental care (n = 65)



Barriers

Sixty-five (43%) felt there were barriers to providing paediatric dental care. The most commonly cited issues related to parents and the child patients themselves. Time pressures and cost implications for practice and parents, and a number of practice and regulatory barriers, were also mentioned (Fig. 4). Some gave more than one response.

Patient/parent issues

Thirty-five cited patient/parent issues; these comments have been broken down into the following subheadings: parental attitudes, lack of understanding/language skills, child reluctance, poor attendance and diet.

Parental attitudes (14)
- 'Parents trying to help but end up giving the wrong advice or info. Or frighten the child with negative language and words like "jag"'
- 'I work with a lot of foreign pts (Asian, Polish) and their beliefs often make it difficult for me to treat them. Particularly those from Asian culture where males "overrule" females thus treating young males with this outlook is difficult because they don't listen and they don't behave and their mothers just stand and watch'
- 'Little time for acclimatisation as I need to meet daily financial targets. Parents often want all treatment carried out in 1–2 visits which can be difficult when pt. is afraid/uncooperative/needs a lot of treatment'
- 'Parents do not seem to realise/care that other patients are waiting, when trying to coax their child into having treatment. Rather than allow acclimatisation and make an appointment to come back they think it's acceptable to insist their child stays in the surgery until they accept treatment. Parents often refuse stainless steel crowns/LA [local anaesthetic]/XLA [extraction under local anaesthetic]'.

Lack of understanding/language skills (5)
- 'Parents' involvement, education, cooperation'
- 'Another issue this brings is that a lot of the parents can't speak English and rely on their kids to translate. Trying to persuade a kid to tell his parents not to give him/her sweets isn't easy!'

Child reluctance (9)
- 'Children are often very reluctant to have treatment done based on fear and lack of previous treatment experience. Therefore often require extra acclimatisation'
- 'Dentists often refer children to me for treatment, and admit that due to lack of cooperation they would not attempt to treat the patient, and before I joined the practice would refer the patient to community and are therefore aware I'm unlikely to successfully treat the patient'.

Poor attendance (6)
- 'High FTA [failure to attend] rates in NHS

practices'
- 'Parents' willingness to...bring them to appointments'
- 'Parents fail to take them for appointment'
- 'I deal with a lot of parents that only care about getting their kids out of pain. Thus FTA [failure to attend] future appts for prevention/fills on asymptomatic teeth'.

Diet (3)
- 'Management of the parent, lack of knowledge of what child eats outwith the home or with other parents/grandparents'
- 'In my personal experience, it can be quite difficult for some parents to hear that their children's teeth have not been getting cleaned properly and parents can be slightly defensive. I believe that social situations in which children find themselves in such as play time at school, birthday parties, peer pressure, sleepovers etc are also used as an excuse to consume sugary products'.

Time pressures (15)
- 'Within a 15min appointment it's difficult to disclose/scale and polish and OHI in that time'
- 'Time in practice for acclimatisation. Too much time spent on treating probs rather than prevention'
- 'Books are full for approx. 3–4 months ahead. Dentists will not refer patients for Childsmile as they would not get any payments if I carried it out'
- 'In most of my practices time is so booked up with hygiene that it is quicker for the child to be booked in with the dentist. In 1 of my practices it's not so much of an issue as there is another hygienist'.

Costs to practice or parents (14)
- 'Sadly in practise [sic] the financial implications of using the hygienist time is more weighted to paying adults. It is more cost-effective to treat adults rather than OHI, dietary advice for children. I think the children are missing out. Cost and time are the 2 main barriers. Also the claiming system in no way recognises any of our work, no codes for OHI unless 3 visits are undertaken, no code for S/P [scale and polish] for kids this would make a big difference if the work we do can be claimed for kids'
- 'Sometimes not having enough time/visits for acclimatisation can bring on a barrier as it's not cost-effective to bring children in for visits when no treatment can be claimed'
- 'Prescriptions for Duraphat both t paste and varnish as per SDCEP. NHS no fee for prevention'
- 'Commercial viability. No fee given for this which means OHI has to be given during tx [treatment] appt, and not given separately. If I could have separate appt I could focus more directly on this subject only'.

Practice and regulatory barriers (8)
- 'The final barrier may be that dentists are concerned about job security since the advent of direct access...certainly it has made the scope of work further reduced'
- 'Not being able to prescribe treatment on the NHS for example, needing an LA [local anaesthetic] prescription or having to go back to the dentist if they have missed something which can mean having to send the patient away if the dentist is not in'
- 'Sometimes the dentist carries out the treatment without referring on the child and the child is already happy to attend the hygienist surgery as they have been many times with parents when they were attending for treatment'.

direct access cover five themes. Again, some respondents referred to more than one.

Efficiency (24)
- 'Yes this would help (meet) the demand for increasing provision of dental care to children'
- 'Being able to treatment plan would remove the barriers that can slow treatment down. It prevents going back and forth from dentist to therapist which can be unsettling for children. It would allow me to assess pts cooperation from day 1 and arrange my appts accordingly. Often the dentist makes appts with me too short/long and in a different order to what I would like (for example, long appt for asymptomatic fills before fissure sealants etc). It would also allow me to maintain my knowledge of diagnosing/tx [treatment] planning as I graduated 2 years ago and fear my confidence will deteriorate and it will prevent me finding work in a private clinic one day (if I chose this path)'
- 'Pt's would have a choice of who they see for treatments and dentists' books wouldn't be so busy'

'Being able to treatment plan would remove the barriers that can slow treatment down. It prevents going back and forth from dentist to therapist'

Views on the future of paediatric dental care

All respondents – whether they treated children or not – were asked whether having an NHS list number would have an effect on the service they were able to provide for children. Responses were divided: 55 (30%) said they thought there would be a positive effect, 15 (8%) said it would have a mixed effect, 2 (1%) said there would be a negative effect and 98 (54%) said there would be no effect (unsure/other answers: 13 [7%]).

Respondents were asked the same question with regards to working on a direct patient access basis. Here, the response was more positive, with 82 (45%) saying it would have a positive effect, 20 (11%) saying mixed effect, 5 (3%) saying a negative effect and 66 (36%) saying no effect (unsure/other answers: 9 [5%]).

Comments regarding the benefits of
- 'A layer of time has been removed; a child requiring preventative treatments could be screened and treated in a single appointment rather than a check then a subsequent appointment to provide this care'.

Promote prevention/more appropriate care (12)
- 'The ability to work under direct access with children I feel would improve prevention in paediatric patients as dentists appear to have little to no time to do this'
- 'Unfortunately I am witness to many children offered GA [general anaesthetic] rather than a little more acclimatisation time or with those with the skills to manage such cases. Paediatric dental care could be very well placed with the therapist'
- 'More freedom to change tx [treatment]

plan if you feel it is appropriate, ie pt is in pain contradicting present plan. Also being able to use F [fluoride] varnish and radiographs without referral would help improve preventative care'

- 'Yes, dental decay can progress rapidly in primary teeth and sometimes the time period between the initial examination with the dentist and the time the patient attends for treatment will mean that the treatment required has changed, having the opportunity to alter treatment to suit the patient's needs...allows for much more efficient treatment and a better outcome... Sometimes children who have high rates of decay may not attend with the frequency which would help benefit their decay progression. Therefore, working on a direct patient access allows all necessary treatment to be carried out without unnecessary delay'.

Clinical autonomy (10)

- 'You have the authority to treat a child patient without having to directly follow a prescription and therefore manage treatment as you feel is appropriate'
- 'To be able to treat patients needs that is, missing filling without having to reappoint for a treatment plan'
- 'Would allow clinicians to diagnose and plan their own treatment as they see best for the patient'
- 'Able to see patients directly within the NHS and diagnose and treatment plan for myself without having to rely on dentist referrals. Be able to work on a rapport with child before treatment is complete'.

Patient choice (9)

- 'Parents could choose to send their kids rather than waiting to be referred. Also I don't think a lot of people are aware children can be seen by other members of the dental team. I think pt's appreciate being referred to the hygienist/therapist more than dentists realise'
- 'More discussion with parents as to what treatment they wanted for their children and what the child would benefit from'
- 'Because parents sometimes ask if their child can be seen by myself to reinforce all OHI and the dentist won't refer'
- 'Would give more choice for parents wanting a more proactive approach'.

Promote rapport (7)

- 'I feel that it would ensure that an ongoing relationship would be formed between both the hygienist therapist and the patient as well as the parent. It would lead to paediatric patients becoming more acclimatised to a situation and more comfortable. I also feel that I am qualified to make a treatment plan for a paediatric patient – one that often differs from another clinician's treatment plan – and that there are some treatments that dental clinicians have not heard of or have minimal information on (preformed metal crowns being at the top of the list) that I feel are excellent, viable treatment options'
- 'Sometimes children are scared of "the dentist" – hygienist can spend more time building confidence'
- 'Also the child seeing one clinician from start to end of treatment would be better for building a rapport/trust foundation'
- 'I try and actively encourage children to come to (hygienist) for oral health care advice and direct access really helps parents who frequently ask if their children can see the hygienist. It's very rewarding to see these children growing up caries free!'

Other (2)

- 'Direct Access system in general needs more support from the NHS, it will save them a lot of money if it fully utilised [sic], and will help dental therapists to carry out their full scope of practice'
- 'With a PGD [patient group direction] there would be no worries about fluoride, LA [local anaesthetic] etc'.

Comments regarding mixed or negative effect (15)

- 'I would have more responsibility in treating patients and make my own decisions as to the best way forward for individual patients. I would need to have further training as to treatment planning for individuals'
- 'I feel as a hyg/ther I wasn't trained to deal with children in an emergency setting and feel this would be the way my day would go – seeing kids in pain as some dentists are very reluctant to see kids patients [sic] especially when they are in pain as they find it difficult to manage'
- 'Positive: in continuity care (ie not referred between diff people), possibly allow more time for prevention and advice. Negative: could still mean ref back to GDP for things outwith scope practice [sic] (depending on additional training able to be undertaken)'
- 'I am not able to prescribe local anaesthetic therefore the patient would have to attend the practice for a second visit for an exam with the dentist to then have to come back for another visit for their treatment'.

Discussion

A number of studies both in the UK and abroad have confirmed the value of involving dental therapists and hygienists in providing oral care to children within general dental services. For example, in the U.S., Koh *et al.* found that home visits and telephone-based interventions by dental therapists were effective in preventing early childhood caries.[7] A study conducted in Western Australia found that therapists were more effective in providing minimally invasive dentistry without recourse to specialist referral than dentists were.[8] A second Australian study reported that the rate of preventive services per patient provided by oral health therapists, dental hygienists and dental therapists varied significantly by the proportion of child patients treated.[9]

'A number of studies have confirmed the value of involving dental therapists and hygienists in providing oral care to children within general dental services'

A UK study based on a purposive sample of 15 adults whose care, or that of their children, had been delegated to dental therapists reports that interviews using narrative and ethnographic techniques revealed overwhelmingly positive experiences.[10] The need for trust in clinicians and the health system emerged as a key factor in its acceptability. These findings are supported by a similar UK study which evaluated the acceptability of preformed metal crowns being placed by dental therapists and hygienists in Scotland.[11] High patient and parent satisfaction was reported.

A number of earlier studies[12,13,14] identified reservations on the part of dentists and dental students regarding developing the teamwork model, including knowledge of

'Many saw working with children on a direct access basis as being a more efficient arrangement which would enable a more appropriate and preventive approach'

dental therapists' remit, concern about patient acceptance, accommodation, availability and supervision. However, a recent review of the impact of dental therapists worldwide concluded: 'The evidence indicates that dental therapists provide effective, quality, and safe care for children in an economical manner and are generally accepted both by the public and where their use is established, by the dental profession'.[15]

A second recent review echoed these conclusions, and argued that reform of the funding mechanisms and regulations limiting patient access to therapists is essential to the removal of barriers to their full use within the NHS.[16] Until this last issue is resolved through the matter of NHS provider numbers for dental therapists, it has been argued, the recommendations of the 1993 Nuffield Report[6] will remain unfulfilled.[17]

Conclusion

The main factors preventing respondents seeing any children or limiting their role with them appear to be: lack of referrals from GDPs; financial implications; or contractual problems. These restrictions were reported more frequently by hygienists than therapists and it is possible that, as dual qualification and direct access become more the norm in general practice, these restrictions will become less pervasive. Many saw working with children on a direct access basis as being a more efficient arrangement which would enable a more appropriate and preventive approach.

While this view chimes with the conclusions of the studies reviewed above, the present study also suggests that there is considerable underuse of hygienists and therapists with respect to paediatric dental care. In the companion article to this, similar barriers and problems were reported regarding the provision of oral healthcare to older patients by these same groups of clinicians.

The full SDNAP report on children's oral health needs was published in 2017.[18]

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