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A qualitative investigation of the influence of time since graduation on English dentists' approach to the care of young children

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Background. In the UK, general dental practitioners (GDPs) provide the majority of dental care to young children. The approach to undergraduate teaching of paediatric dentistry varies across UK dental schools. There is no understanding of how undergraduate teaching influences practice in the first few years after qualification and how this influence behaves over time as dentists mature as clinicians.

Objective. The aim of this paper is to gain a deeper understanding of the influence of time since graduation on how GDPs manage the dental care of their child patients.

Design. A qualitative study, with three interviewers conducted 93 interviews with GDPs practising in the north-west of England. Interviews were transcribed verbatim and content analysis was used with the purpose of identifying themes from the data.

Results. Findings showed that formal postgraduate education was not a great influence upon the GDPs' approach to care over time. Change in approach was influenced by experiential learning over a GDP's career and external influences such as policy change, but this was not underpinned by any formal reflective practice.

Conclusions. Education is just one of many influences on clinical practice over the whole of a clinician's career. A gradual change in clinical practice is influenced by the personal experience of dentists treating children.

Introduction

Understanding how the dental care of young children is approached and delivered is important, as the care provided can have long-lasting consequences on the dental health of individuals and their attitudes to accessing dental care. In England, approximately 40% of 5-year-old children have dental caries and this statistic has remained largely unchanged over the last 20 years[1]. In contrast, the restorative index, a statistic that measures the proportion of decayed teeth treated by restoration[2], has fallen markedly in the 5-year-old child population over the last 20 years[3]. The majority of the children's dental care in the UK is provided by general dental practitioners (GDP) and although the low restorative index has caused concerns that GDPs are not restoring carious primary teeth[4], recent practice-based studies suggest this is not the case[5,6].

There has been a debate over the last 3 or 4 years about how best to manage the dental care of young children within general dental practice[7–9]. Further studies have demonstrated that multiple factors at the tooth, patient, and dentist levels with extremely complex interactions affect GDPs' treatment decisions[10,11]. The literature suggests GDPs' approaches and attitudes to the care of children vary significantly. For example, it has been reported that GDPs' use of fissure sealants is related to the type of practice in which they work, their age, their attitudes towards sealants, and the number of journal articles read[12].

Dentists' undergraduate education provides them with basic knowledge of paediatric dentistry. In the UK, the General Dental Council (GDC) is responsible for the quality of undergraduate

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dental education. The GDC's policy document, *The First Five Years*[13], aims 'to direct and guide the dental authorities, who award degrees and licences in dentistry, in the design and implementation of courses of study'. This guidance provides a broad outline of the areas the undergraduate curriculum is expected to cover with respect to paediatric dentistry, but it cannot provide a detailed prescription of how every aspect of paediatric dentistry should be taught. Inevitably there is variation in emphasis amongst the UK dental schools in the teaching of paediatric dentistry. However, the extent of the variation among GDPs in the care they offer young children cannot solely be explained by differences in the teaching received at dental school. Factors after graduation must also play a part. Postgraduate education has a key role in informing and improving clinical practice and for those developing courses and curricula and teaching paediatric dentistry, it is important to understand how GDPs' approach to child dental care changes over time. The objective of this study was to gain a deeper understanding of the influences over time on a GDP's approach to the dental care of children.

Method

This study formed part of a larger research project that used both qualitative and quantitative research methods to gain a deeper understanding of the provision of dental care to young children in general practice. Qualitative research is 'concerned with the meaning people attach to their experiences of the world'. It is particularly suited to explore in detail the complex reasons and processes leading to GDPs' behaviours[14]. By taking a qualitative approach, investigators search for meaning in a social context rather as opposed to a quantitative approach that look towards identifying causal explanations of phenomena.

Multisite research ethics committee approval was sought and obtained prior to the start of the study. The study population was drawn from GDPs practicing in the north-west of England, in the counties of Lancashire, Cheshire, and Greater Manchester. Dentists were selected at random from the GDC's register and sent a letter inviting them to participate. This process continued until approximately 100 GDPs had agreed to participate. The sample was not determined by statistical considerations but did aim to be sufficiently large and varied enough to capture the full range of views and opinions of GDPs working within the region. A total of 311 dentists were invited to take part, 96 agreed to participate and 93 interviews were successfully completed. Two of the three dentists that initially agreed to take part later declined because of work commitments and one declined because of illness.

Each participant was interviewed individually by one of three trained nondental interviewers. To limit bias in the interview technique, the interviewers received training from an experienced qualitative researcher, at the University of Manchester. In addition, to aid their understanding of primary care dentistry, two respected local GDPs gave further information relating to clinical situations and dental terminology.

The interviews were semistructured and supported by the development of a pro forma, which was based on a set of themes identified by a panel of experienced GDPs and specialists in paediatric dentistry (Fig. 1). The themes covered different aspects of the dental care of young children, one of which was how GDPs' clinical practice changes over time and what are the influences that bring about this change. The GDPs were encouraged to speak freely about the care they provide to young children.

The interviews with GDPs varied in length but took on average approximately 30–40 min. The fieldwork took place in the dentists' homes or places of work and was conducted between March 2003 and September 2003. The interviews were tape recorded, numbered to ensure anonymity, and transcribed verbatim. Two members of the study team (Y.D. and A.T.) independently read all of the transcripts and analysed the data. Content analysis was used to identify all specific words or phrases referring to or connected with the influence of time since graduation on how GDPs approach the dental care of their young patients. The words and phrases were assigned a code to categorize the data into themes. The two members of the team compared their coding at regular intervals during the analysis until a set of themes were established. Trying to condense

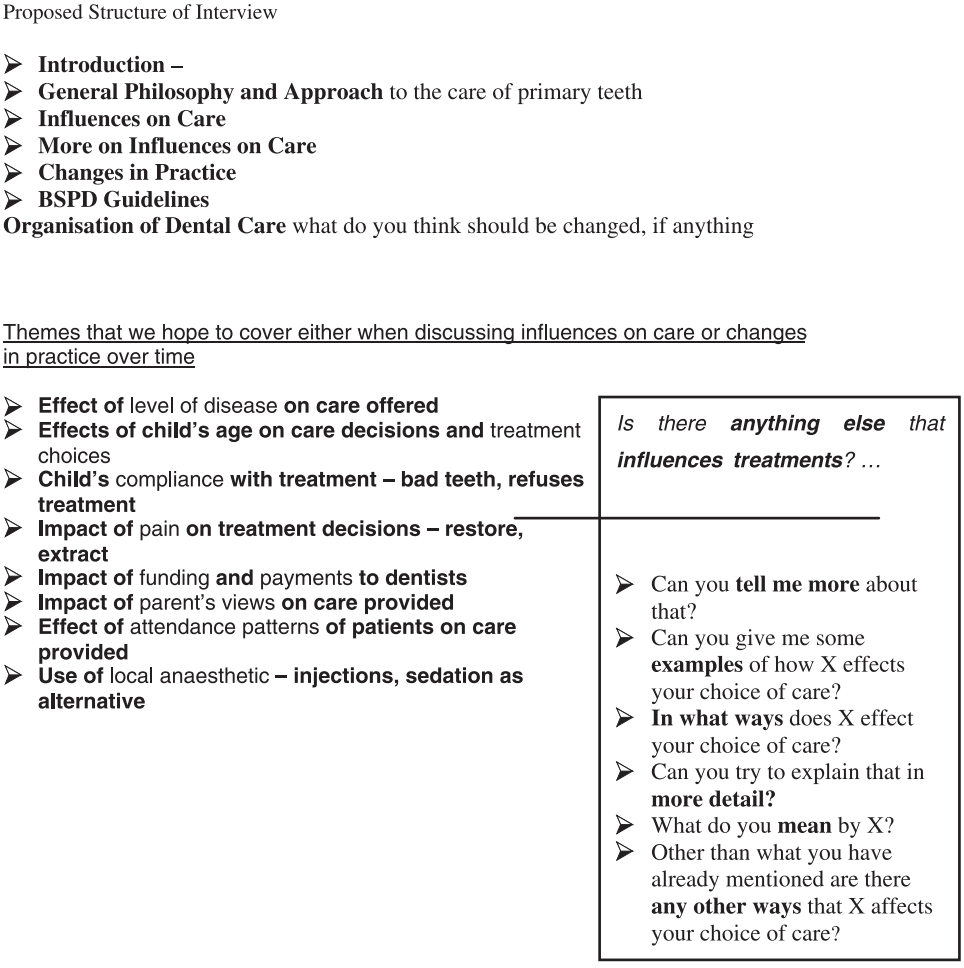

Fig. 1. Extract of interview schedule.

all the information into a readable format may have reflected prejudices of the researcher and lead to attributive error. Attempts were made to overcome this by two members of the study team (Y.D. and A.T.) independently reviewing all the transcripts. In addition to their content analysis, all members of the research team independently read a 30% sample of all the transcripts and at a group meeting team members presented their interpretation of these data. At this meeting the findings from the content analysis were presented and discussed and the key findings agreed. Representative quotes from participants were selected to illustrate these themes.

Results

Of the 93 GDPs interviewed, 34 (37%) practised in Cheshire, 30 (32%) in Manchester, and 29 (31%) in Lancashire. The north-west of England has two dental schools, in Manchester and Liverpool. One-third of the sample had graduated from Manchester, just over a quarter from Liverpool, and the remaining respondents were graduates of universities across the UK and the Republic of Ireland. Three quarters of the sample had qualified more than 10 years ago and almost three quarters were male (Table 1).

The data analysis identified that there was a distinct difference in the approach to care when a practitioner's time since graduation was included in the analysis. Data are therefore initially presented separately for three subgroups of the sample according to each participant's time since graduation from dental school. The three subgroups identified were those dentists who: (i) graduated less than 5 years; (ii) graduated between 5 and 10 years; and (iii)

Table 1. Profile of subjects.

	Total (n = 93)
Area of practice	
Cheshire	34
Manchester	30
Lancashire	29
Gender	
Male	70
Female	23
Years since graduation	
< 5 years	8
5–10 years	10
> 10 years	75
Place of qualification	
Manchester	32
Liverpool	25
Leeds	6
Newcastle	6
Sheffield	6
London	5
Dublin	2
Bristol	2
Glasgow	1
St Andrews	1
Dundee	1

graduated more than 10 years before the interviews.

In addition, four specific factors were identified that influenced all of the dentists' approach to the care of children over time. These were: (i) changing location of practice; (ii) dentists' perceived change in children's dental health; (iii) changes in dental materials; and (iv) change in National Health Service (NHS) dental policy.

The findings are reported separately.

Dentists who graduated less than 5 years ago

Participants from this cohort reported significant influences on their clinical practice within the first year after qualification. The majority of respondents had grappled with a need to change the approach to care of children, which they had learned in dental school. There was an almost immediate need for new graduates to adapt and fit in with the time constraints of treating children within the English NHS General Dental Service. The following quotations illustrate the pressure on clinicians' time in this system.

> 'You have to adapt because you do not have all the time in the world like at university.' (ID 365, graduated 2000)
>
> 'It is completely down to time. Unfortunately I can only see the children who will accept treatment.' (ID 993, graduated 2001)
>
> 'You do not spend the time or give them that extra bit which you would have in dental school.' (ID 990, graduated 2001)

Some of the participants described the impact of time constraints upon their ability to communicate with their child patients.

> 'I mean at university when I had children with this kind of a problem you could have 40 min just talking to the child, bringing them in and sitting them in the chair and letting them have a go of the chair and showing them the drills and they would leave happy and had a positive idea of what is going to happen. You finish off by giving their teeth a clean and they are happy, the parents are happy and they go away with a smile on their face; you can't do that here. Here you have to take it down to 10 min.' (ID 39, graduated 2002)
>
> 'You may have to refer them, ideally you would like to talk to keep them going.' (ID 990, graduated 2001)

Differences in the availability of materials in General Dental Practice and the in Dental Schools was also a factor in changing some dentists' patterns of care.

> 'Dental school had a lot more materials.' (ID 367, graduated 1999)
>
> 'You may restore teeth differently to what we did in Dental School according to material price.' (ID 432, graduated 2002)

As the new graduates were adapting their approach, some were still trying to adhere to the patient management philosophies that they had learnt in dental school while others were questioning past teaching.

> 'My overall philosophy is still the same to try to catch decay early and prevention.' (ID 365, graduated 2000)
>
> 'The care for children is maintaining the oral health and teeth until they naturally exfoliate.' (ID 432, graduated 2002)

'Used to teach us to treat caries wherever it was. But now if you have C's with a buccal lesion, I will only treat if needed as a motivation factor.' (ID 1766, graduated 1999)

Dentists who graduated 5 to 10 years ago

As the time since graduation increases, practitioners' experience began to override their initial approach, which had been principally influenced by their dental school education. This gradual change based on clinical experience is demonstrated by the following quotes.

'I may not do what was considered textbook treatment as when I graduated.' (ID 319, graduated 1998)
'If you see an 8 or 9 years old who had got all their primary teeth shot at, then it starts to influence your approach.' (ID 643, graduated 1996)
'My experience is that you can be a bit gung ho with treatment when you first qualify, and a kid comes in needing fillings and you think I will fill all these teeth. This soon changes.' (ID 1323, graduated 1998)

As experience in practice increased, many practitioners were reporting that contrary to their dental school teaching, they were inclined not to restore decayed primary teeth.

'It was something you watched over the years and watched how the treatment was working.' (ID 243, graduated 1992)
'In dental school you were trained to do the full works on children. I do not do that now, and I only give local anaesthetics if I am doing extractions.' (ID 554, graduated 1993)

The majority of practitioners has become more reluctant to restore all carious primary teeth since graduation; however, there was a sole practitioner who held an opposite view.

'Initially when I first graduated the easy option was not to fill. Now I always go out of my way to restore providing the child is co-operative.' (ID 1402, graduated 1996)

Dentists who graduated more than 10 years ago

As time from graduation increased, the practitioners approach to care was influenced less by the principles learned at dental school, and more by their individual experiences in practice. In this group the time since graduation was sufficiently long enough, to allow the practitioners to be able to reflect on their practice although this reflection did not appear to be carried out in a structured manner.

'I do not know whether my ideas have changed other than what I do has changed because of experience.' (ID 2396, graduated 1990)
'As you get older you learn by experience of ways to treat children.' (ID 333, graduated, 1984)

This older group of GDPs echoed the views of those who had qualified 5–10 years ago, describing that through experiential learning they were less inclined to restore all carious primary teeth.

'Basically treatment has altered to a case of nontreatment, one finds this out quickly after leaving university.' (ID 348, graduated 1986)
'I used to do a lot of treatment on kids, but you rarely saw them again. Over time I would say I have been doing less treatment.' (ID 241, graduated 1988)
'Over the years I have done a lot less restorative work. There is no evidence of damage to permanent teeth if deciduous teeth left with decay.' (ID 316, graduated 1984)

Four additional factors interacted with time since graduation to influence dentists' approach to care of their child patients.

Practice location. Many of the practitioners had experience of working in multiple practices, which were located in different areas and in each practice the patient population differed socioeconomically and, therefore, had different treatment needs. The socioeconomic status and the level of dental disease of the practice population had a considerable effect upon the GDPs' management of their child patients.

'Approach has probably changed because I've been in different areas.' (ID 333, graduated 1984)
'Change was not me but moving practice area, where the decay rate improved.' (ID 879, graduated 1987)

'Even though there is prevention I think a lot depends upon where you practice.' (ID 2213, graduated 1987)
'Moving out of the big inner city. My treatments have changed I have got used to being more preventatively orientated.' (ID 2166, graduated 1988)

Perceived changes in dental health. Many of the experienced practitioners acknowledged that during their clinical careers there had been noticeable improvements in the dental health of the children attending their practices. This trend had altered their practice towards a more preventative approach.

'A lot of children will have much better teeth, but we find there is a big difference between the good section and the poor section, before the spread used to be more graduated.' (ID 1095, graduated 1987)
'Patients' dental health has changed and, therefore, my dental practice has changed.' (ID 196, graduated 1983)
'Although this area is still one of the worst in the country, the dental health of the children has dramatically improved. I suppose now I do a lot more emphasis on prevention.' (ID 2243, graduated 1984)
'We just do not see the horrendous problems we used to. We now try to get over the diet side to the mothers.' (ID 2332, graduated 1968)

Changes in materials. Over half of the practitioners reported that the materials, which they used, had changed and this had an effect upon their clinical practice, although there was no consistency in the choice of materials used.

'Probably in the beginning I would use amalgam in a child's dentition I would never do that now.' (ID 1612, graduated 1980)
'I suppose that the materials have changed. They were not available when I qualified. I use glass ionomer. I think that the new materials are very successful in deciduous teeth.' (ID 1403, graduated 1983)
'I tend to use composite rather than glass ionomer or even amalgam because it lasts longer.' (ID 2396, graduated 1990)
'I use compomer. I think that this has been the one thing to change the way I work.' (ID 2166, graduated 1988)

There were very few GDPs who mentioned how continuing education had contributed to them changing their usage of materials. The majority echoed the views of the following dentists.

'I use glass ionomer. I was not taught how to use it I just picked it up along the way.' (ID 2213, graduated 1987)
'I know from various other dentists, what works for one dentist doesn't work for another. Some dentists are very happy at placing certain materials. Take amalgam for instance, some just love using amalgam, but other dentists like to use some new materials or composites and they will be more proficient at that. You use what you enjoy and what you are good at.' (ID993, graduated 2001)

Changes in national policy. A frequently cited reason for sudden change in practice was the implementation by the Department of Health of a capitation-based remuneration system for children in 1990[15].

'The new contract in 1990 drastically altered the way we treated children in poor areas, it did not cover the treatment they needed.' (ID 532, graduated 1988)
'Most changes have been government led and influenced.' (ID 631, graduated 1990)

The GDC's 1998 recommendations for changes in the provision of general anaesthesia in primary dental care[16] also resulted in GDPs changing their approach to the care of children, as they no longer had the same level of access to general anaesthesia.

'We used to have a lot of opportunity to refer patients for GA. Now I would say that if a kid has toothache there are no GA clinics to refer them to. We would try to treat the tooth with antibiotics and dress it. We occasionally have to take out deciduous teeth we don't take out half as many though.' (ID 1000, graduated 1984)
'I have started doing the extractions myself with a local anaesthetic. You have to pick your cases very carefully.' (ID1084, graduated 1981)

Discussion

These data provide an insight into the influences over time on GDPs' approach to the dental care of young children. The study sample included GDPs in the north-west of England who had a diverse range of qualification dates. The sample is not statistically representative but is high in subject numbers compared to the various definitions available for a qualitative sample size which state 'a typical qualitative study is an in-depth enquiry of a relatively small number of subjects – at most tens, not hundreds'[14]. Therefore, in the authors' opinion, it is likely that the views and experiences of this large and diverse group of GDPs are mirrored in other groups of GDPs across the UK. The reason behind the high number of participants relates back to the lack of information of dental practitioners' views on a wide range of subjects concerning the care of young children and the need for large numbers of interviews with dentists to examine multiple topics in depth.

The data suggest that two broad processes strongly influence GDPs' paediatric clinical practice as their career develops. The first is a process of adapting what was learned at dental school to the realities and requirements of general practice. This occurs immediately following graduation and is due to the contrast in the different imperatives for students in dental schools (namely, to gain knowledge and skills), and for registered dentists working in dental practice who need to earn a living by providing an efficient service. The second process influencing clinical practice involves learning by experience over time. Over the length of their career dentists gain experience and knowledge about what works best for them. Events can trigger a sudden change in clinical practice. For an individual dentist a change of workplace can be a driver for a change in approach. This is especially the case if a dentist moves practice and has to provide a service to a population with very different needs than the population of their previous practice. Other fundamental change outside of the control of dentists, for example, an alteration in healthcare policy, especially if this is linked to remuneration, will also lead to sudden change in practice. For example, in the UK until 1990, GDPs working in the National Health Service had been paid on a fee for item of service basis, which acts as an incentive to provide restorative treatment. In the early 1990s, the method for funding GDPs who treated paediatric patients was altered from this fee for item system, to a capitation system. The government of the day believed that a capitation system would be a more appropriate way to fund children's dental care because a preventative rather than a restorative philosophy is encouraged. However, capitation systems give dentists incentives to provide less treatment and many commentators attributed the population decline of paediatric restorative care to the conversion to a capitation system[17]. Concerns about the fall in the restorative care index was one of the reasons for the reintroduction in 1996 of a small fee for item payment for restorative treatments provided to paediatric patients.

With the exception of policy changes two long-term trends were also found to influence care provided by general dental practitioners: the general improvement in dental health of children attending dental practices and the continuing development of new restorative materials.

The concept of evidence-based practice is now well established and accepted[18,19] and Continual Professional Development (CPD) is now mandatory in the UK[20]. As a result, one might have expected that postgraduate education, clinical audit, or clinical guidelines would have been reported as factors that influence clinical practice, but CPD activities such as formal learning and postgraduate education were rarely mentioned by the GDPs and there was no evidence that any of the GDPs used a formal structured methodology to reflect on their approach to clinical practice or the outcomes of the care they provide. Instead, it seems that GDPs gather theoretical knowledge and clinical experience haphazardly over time and these personal observations and experiences influence a slow evolution of their clinical practice in an unstructured, seemingly unconscious manner. This undocumented, protracted, trial-and-error method of providing a service for young children is not compatible with a modern, evidence-based approach to care. This very subjective development of clinical practice, with each practitioner adapting their practice based on their

own personal experiences, will be a significant contributing factor to the large variation in the management and care of young children reported in recent studies[10,11,21]. This slow change in clinical practice is not assessed in anyway; a situation that cannot be supported because, although clinical experience can improve the quality of clinical care, dentists can slowly and unwittingly develop bad habits that have adverse outcomes for their patients.

An evidence-based approach to commissioning of dental services by National Health Service (NHS) Primary Care Trusts could provide an external influence to this agenda; however, it is more desirable if change in clinical practice is clinician-led. Clinical governance[22] is now a requirement of all NHS dental services[23], and although the evidence base to inform the delivery of restorative treatment of young children is weak, this does not prevent practitioners critically evaluating their practice in a structured fashion. Clinical audit is a well-established tool to improve the quality of clinical services and is an integral part of CPD[24]. However, reflective practice is rarely used or discussed within the dental profession in the UK. Reflection is a concept at the heart of two theories of learning, both of which are relevant to dentistry[25]. First, reflection is central to the development of knowledge and understanding when learning is taking place as a consequence of performing a task or occupation; this is 'experiential learning'[17]. Second, reflection enables new experiences to be integrated into existing frameworks of knowledge; this is known as 'constructivist learning'[26]. Reflective practice is a growing trend in the education of professionals allied to medicine[27,28] and in many instances it is now part of the undergraduate curriculum. The GDC (the UK self-regulatory body of the dental profession) guidance for dental undergraduate education states that a curriculum should prepare students to undertake self-directed learning throughout their professional lives[13]; however, there is no mention of reflective practice. A recent study investigated the use of reflection in dental therapy courses and concluded that to successfully develop this approach in dental education would require an institutionalized culture change[25].

The results of this study suggests that GDPs' approach to the care of young children is affected by external factors at different phases of their career, but there is also an underlying gradual change in clinical practice influenced by the personal experience of dentists treating children. The evidence base for paediatric dental care needs to be improved but equally dentists should objectively audit and reflect on their clinical practice. Dental schools, postgraduate training programmes, and governing bodies, such as the GDC, need to think carefully about how to prepare and support dentists to critically evaluate their clinical practice and manage change effectively.

What this paper adds
- A career long view to influences on practitioners behaviour.
- The care children receive varies according to the age, gender and experience of practioners.
- Concerns about variation.

Why this paper is important to paediatric dentists
- Emphasises need to develop evidence base for routine care of healthy children.
- Informs approaches to postgraduate education and training.

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