'Bridging the gap' – A survey of medical GPs' awareness of child dental neglect as a marker of potential systemic child neglect

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Key points

- Half of GPs surveyed believe childhood immunizations to be more important than registration with a dentist.
- Majority of practicing GPs surveyed had never undertaken any formal training in dentistry and some did not believe dental health to be important.
- Medical GPs lack an awareness of the implications of childhood dental neglect to health and wider systemic neglect.
- Study calls for improved communication and collaborative working between dentists and medical GPs and greater prioritisation of child health and welfare in the NHS.

Background Higher levels of tooth decay are seen in abused and neglected children. The medical general practitioner (GP)/family doctor is often the first point of contact within the UK National Health Service (NHS). **Aim** We aimed to assess in the absence of the dentist whether GPs are sufficiently trained to identify dental neglect (DN) as a marker of child neglect (CN). **Design and setting** A structured survey was sent to all NHS GPs on the Isle of Wight, UK (n = 106). **Method** This survey examined the level of awareness and perceptions of GPs regarding the importance of the provision of dental health care in the identification of DN and CN. The level of training GPs had received to identify dental pathology was also assessed. **Results** Fifty-five GPs completed the survey (52%). The majority of GPs had never liaised with a dentist and 50% of the GPs believed childhood immunisations were more important than registration with a dentist. Ninety-six percent of GPs had never received any formal dental training and some did not perceive dental health to be important. Only 5 GPs mentioned a link between a lack of dental registration and CN and no GPs worked at clinics where child dental registration status was recorded. **Conclusion** In the absence of formal recording, follow up and compulsory attendance at the dentist, the timely detection of DN and potential CN may be impaired. This study demonstrates that medical GPs are ill-equipped to detect DN, a recognised marker of broader neglect and therefore may miss an important opportunity to detect CN and improve child health and welfare.

Listen to the author talk about the key findings in this paper in the associated video abstract. Available in the supplementary information online and on the BDJ Youtube channel via http://go.nature.com/bdjyoutube

How this fits in

To our knowledge, to date no studies have been undertaken that specifically examine the role of GPs in identifying dental neglect in children. It is not mandatory for parents to take their child to the dentist in the UK and yet often GPs are the first point of access to the NHS. In the absence of the dentist, this original piece of research demonstrates that GPs lack training and confidence in identifying dental neglect during routine examination of the oropharynx. GPs also lack an awareness of dental neglect as a potential marker of wider systemic child neglect.

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Introduction

Neglect has been defined by NICE as 'the persistent failure to meet the child or young person's basic physical or psychological needs that is likely to result in the serious impairment of their health or development'.[1] Dental neglect was defined in 2009 in the UK as 'the persistent failure to meet a child's basic oral health needs, likely to result in the serious impairment of a child's oral or general health or development.[2] One in ten children are suspected to have been or are being neglected in the UK[3] and it is estimated that one to two children in the UK die each week as a result of neglect or abuse[4]

'There is no diagnostic gold standard for neglect and therefore decision-making in situations of apparent neglect can be very difficult and thresholds hard to establish.'[1] It is thought that greater research is required so that thresholds can be established that are evidencebased.[5]

Dental neglect features within the wider context of child neglect[5] and yet the majority of neglect is unrecognised by professionals and under-reported[6–10] and as a result, children continue to suffer in silence. The absence of regular dental checks may augment such a lack of recognition.[11]

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Dental neglect and child neglect

A study specifically examining the dental health of children with child protection plans revealed that they had significantly higher levels of dental decay in their primary dentition compared to the control group examined.[12]

Other studies have revealed that poorer children are more likely to experience dental caries[13–16] with higher levels of tooth decay recognised in abused and neglected children at 5 years of age.[17] However, many children face inequalities in access to dental care in the UK and often children who live in greatest deprivation, experience higher levels of dental disease, coupled with the greatest barriers of access to the care that they require.[5]

The consequence of severe dental disease includes pain,[18] sleep disruption, difficulty eating, school absence[19] and could also result in psychological abuse due to poor dental appearance[4] further exacerbating school absenteeism.

What is more, dental disease may result in the need for repeated courses of antibiotics, repeated hospital admissions for extraction under general anaesthetic, and severe infection.[4] The cost of such hospital admissions is reported as £30 million per year.[2] Although thought to be rare, cases of life threatening systemic sepsis as a consequence of dental infection have been reported in the literature.[2,20]

Long-term, periodontal disease is also associated with increased lifetime risks of ischemic heart disease, diabetes and oropharyngeal cancer.[21–24] DN may therefore have immediate and longer-term consequences for the health of a child. DN reflects an unmet need and has been termed a 'type of cruelty',[11] the first guidelines regarding this were published by the National Institute of Health and Clinical Excellence (NICE) in the UK in 2009.[1] The UK Government guidance on child protection clearly states a role for dentists in identifying CN and the importance of information sharing with all health professionals.[4,25]

The opportunity to identify potential DN could be missed if a child is not examined on a regular basis by a dentist. Registration with a dentist, however, is not compulsory in the UK and there is no formal system to independently confirm a child's registration status.[6] Dental care for children is free to all children eligible for NHS care. This is clearly stated in the 'My personal child health record'[26] – a hand held record and source of health information given to parents upon the birth of their child; which they are encouraged to bring to health visitor and medical appointments, and is a tool used by health professionals to record medical and social data, including immunisations, physical examinations and the growth of the child.

A change in the NHS dental contract in 2006[27] has led to a belief by some professionals that there is an increase in demand for NHS dental services that now exceeds existing resources.[28] It is recommended that all children should see a dentist by the age of one year,[2] but the seeking and acquisition of dental care for children is not a compulsory, legal requirement of parents and access to dental care for children is potentially limited by many factors including the availability of local dental services for children,[5] parental anxiety,[5–6,9,29] the cost of parental travel to take the children to the dentist,[9,11] expressed parental satisfaction/dissatisfaction with dental care for themselves,[29] a low value placed upon oral health by parents,[9] and the pro-activism of parent(s)/guardians in taking their child to see the dentist.[9] In the absence of the dentist, the health visitor and the school health dental surveillance (changed in 2006),[11] it is possible that DN will remain undiagnosed. 'The family doctor (GP) is the first point of contact with the health service for most people.'[25] GPs therefore may be the only health professionals with an opportunity to identify DN as a potential marker of wider and systemic neglect. Not all children with poor dentition, however, are neglected,[2] there are several health conditions that predispose and increase a child's risk of suffering poor dentition such as congenital aplasia of salivary glands for example;[2] but it is 'the persistent failure to meet a child's basic oral health needs, likely to result in the serious impairment of a child's oral or general health or development', that constitutes neglect.[2]

A study published in 2009 revealed that between 1997–2006, there was a 66% increase in hospital admissions for dental extraction due to caries in children in England, the peak at 5 years of age.[13] Of concern is the extraction rate was found to increase yearly, highlighting that dental caries in children is a major public health issue.[13] More recent data reveals little change,[30,31] suggesting a general lack of awareness of the importance of dental health to the overall wellbeing of children. A study examining the role of public health nurses' assessments of oral health in preschool children revealed that there is variation in the assessment of children's oral health and health professionals' perception and threshold for the determination of child neglect.[6] These findings were also seen in a study examining the threshold at which hospital paediatricians, nurses and dentists were able to identify dental neglect as a marker for wider systemic neglect.[14] To our knowledge this has not been assessed among GPs.

After first-hand experience by one of the authors of the identification of DN during routine clinical practice and the underlying CN that was discovered following further enquiry; this study was conducted to examine the perceptions, views and experiences of GPs on The Isle of Wight, UK regarding the importance they place upon access to and the practice of dental health and hygiene and whether their attitudes might assist or impair the identification of dental neglect.

Methods

Location: The Isle of Wight (IOW) is located off of the south coast of the UK, its total area is 380.16 km^2 or 146.8 sq miles.[32] Children under the age of 15 make up 14.8% of the total island population of 139,395 (as of June 2017).[32]

This study examined the population of GPs practising on the IOW and convenience sampling was used as it is a well-defined geographical area and it is the place of work for two of the authors who are familiar with the demographics of the patient population and had prior knowledge of the GP and health service community. The demographics of the child population of the IOW was established from published reports from Public Health England (PHE) and summarised in Table 1.

From this summarised data, it would appear that the dental health of children on the IOW has varied over recent years – for example, in 12-year-olds it was significantly worse in 2008/9 and more children lived in poverty when compared to the national average. More recently, the Child Health Profile reported by PHE in March 2016, revealed that the child poverty of the IOW is worse than the England average, and that the A&E attendance level in children under 4 years of age and hospital admission rate for injury in children are both higher than the national average.[37]

A survey utilising both qualitative and quantitative methods of data collection was adopted for this study in the aim of capturing the level of GP awareness around child dental health and neglect. The survey was designed using a combination of both open and closed questions that were based upon the clinical experience of the authors and after informal discussion with colleagues.

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Table 1 Tabulated data of reports produced by PHE[33–36] comparing the IOW to the average for England

Year of report	Child poverty (Under 16-year-olds)	Hospital admission for illicit alcohol use	Academic achievement (GCSE 5A*–C)	Dental health
2011	'significantly better' (data 2008)	'significantly worse' (data 2006/7 2008/9)	'significantly worse' (data 2009/10)	'not significantly different.' (5-year-olds) (data 2007/8)
2012	'significantly worse' (data 2009)	'significantly worse' (data 2007–10)	'significantly worse' (data 2010/11)	'significantly worse.' (12-year-olds) (data 2008/9)
2013	'significantly worse" (data 2010)	'significantly worse' (data 2008–11)	'significantly worse' (data 2011/12)	'significantly worse.' (12-year-olds) (data 2008/9)
2014	'significantly worse' (data 2011)	'significantly worse' (data 2010/11–2012/13)	'significantly worse' (data 2012/13)	'significantly better.' (5-year-olds) (data 2011/12)

The type of study design was justified in the knowledge that while quantitative data provides objective evidence and aids in the establishment of 'probable cause and effect',[38] in the context of cases of CN it is qualitative data which provides the reasons and narratives behind the presentation and aids in providing a more 'complete understanding of the problem'.[38]

The survey was not externally validated, but reviewed internally and agreed upon by the first and second author. A list of all GPs registered on the IOW working as NHS doctors was obtained. All registered GPs (n = 106) on the IOW were sent a survey, a second class stamped, self-addressed envelope and a covering letter explaining the aims and objectives of the research (see Appendix 1 in the online supplementary information). This was sent to each GP's listed place of work.

A time frame of two weeks +2 days to allow for postal delays was initially allowed for the completion and return of the surveys to an elected named surgery on the IOW. After 7 consecutive days had passed, 29 returned and completed surveys had been received.

A further reminder email to all eligible GPs on the Island was sent and as a result of this, a number of GPs reported to the first author that they had not received any correspondence. Based upon this information, a further four surveys were sent to address this problem.

The response rate was also improved by the first author's opportunistic interaction with colleagues and formally by sending a follow-up email to all the practice managers of the Island GP surgeries asking them to remind the GPs of the research and their opportunity to contribute. As a result of the amendment to the original protocol, the deadline for the completion and return of the survey was extended by a further 7 days.

Each anonymous GP survey was numbered sequentially upon return and the data collected were analysed both quantitatively and qualitatively. The GPs' response to questions pertaining to childhood immunisations was used as a benchmark against which to assess their response to dental healthcare promotion and disease prevention.

Lack of engagement in immunisation programmes is listed in NICE guidelines as a factor to consider when assessing possible signs of parental child neglect.[1]

Quantitative data obtained were analysed using Excel and Epi-Info 7. Qualitative data were grouped into common themes and concepts which were then linked to the original survey questions and analysed thematically.

Ethical approval

After consultation with the Department of Research and Development at St. Mary's Hospital IOW, ethical approval was sought and obtained from the NHS (REC reference 14/EE/0111. IRAS project ID: 149352) and the London School of Hygiene and Tropical Medicine.

Results

Of the 106 GPs sent surveys, 55 (52%) completed the survey. Table 2 shows the quantitative data gathered in the GPs' responses to the survey.

Qualitative summarised data

Responses when a child had not received immunisations

Themes that emerged in response to the question *'If a child had not received all the recommended immunisations, what would your practice do?'*

Examples of GP responses (all responses are listed in the appendix in the online supplementary information):

GPs who would make further contact with parents via a letter or telephone call

GP 3 *'Usually three reminders are sent, if its primary immunisation then we try and talk to mum as well about it.'*

GP5 *'Attempt to contact parents by letter to arrange immunisations or to see if they are being refused.'*

GP9 *'Send 3 letters, then notify GP who usually calls parent to try to discuss.'*

GP10 *'Chase-up with phone calls/letters.'*

GP42 *'Nurses follow protocol of three reminder letters, then GP follows up by letter or phone call.'*

GP21 *'We contact them, letter × 3, then phone.'*

GPs who would explore parent/guardians' perspectives

GP8 *'Speak to the parents about their rationale and help them address concerns.'*

GP16 *'Chase the family up and find out why not.'*

GP55 *'Invite for discussion.'*

GPs who included in their response notifying or involving the health visitor

GP19 *'Follow-up and encourage them to (get) H Visitor [health visitor] involved'*

GP20 *'Contact parents/Inform Health visitor.'*

GP11 *'Reminders, Health visitor, verbal pressure'*

GP18 *'Encourage, advice, record, D/W [discussed with] HV.'*

GP30 *'Contact them by letter/inform HV.'*

GP24 *'Write, phone, contact HV to help chase.'*

GPs who in addition to contacting the parent/guardian would record or highlight lack of engagement with immunisations in the medical notes

GP12 *'Write to them repeatedly, yellow alerts on records.'*

GP13 *'Yellow flag, write a letter × 3, "grab" when next in surgery.'*

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Table 2 Responses to GPs' survey: Quantitative data

	Number (N =)	%	X^2	P-value
GPs who know the location of their local dentists	28	51		
Total of GPs who responded	**55**		**0.018**	**0.8927**
GPs who have ever liaised with a dentist about a patient	5	9		
Total of GPs who responded	**55**		**36.81**	**<0.0001**
GPs who comment on the state of patients' teeth?	18	33		
Total GPs who responded	**54**		**6**	**0.0143**
GPs who examine paediatric patients' dentition?	22	40		
Total of GPs who responded	**55**		**2.2**	**0.1380**
GP reasons for not examining dentition:				
Too difficult	0	0		
No training in dentistry	19	34		
Belief that they are not insured to Dx & Rx	3	5		
Worried will upset patient feelings	5	9		
Impediment to patient/doctor relationship	4	7		
Time constraints	20	36		
Other	5	9		
Total	**56**		**48.50**	**<0.0001**
GPs' responses to expressed child protection concern by dental colleagues:				
Advise dentist	20	32		
Contact parents themselves	32	51		
Call children's social services	5	8		
Other	6	9		
Total	**63**		**31.29**	**<0.0001**
GPs' perceived extent of child dental decay on the IOW				
Yes (is extensive)	21	39		
No (is not extensive)	16	30		
No idea of the extent of dental decay in children	17	31		
Total of GPs who responded	**54**		**0.778**	**0.6778**
GPs who believe that dental registration is as important as immunisations	25	50		
Total of GPs who responded	**50**		**0.00**	**1**
GPs who have received formal dental training?	2	4		
Total of GPs who responded	**54**		**46.296**	**<0.0001**
GPs who are confident in diagnosing dental problems	23	43		
Total of GP responses	**54**		**1.185**	**0.2763**
GPs who work at surgeries that record dental registration status	**0**	0		
Total of GPs who responded	**51**		**51**	**<0.001**

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GP12 'Write to them repeatedly, yellow alerts on records.'
GP46 'Invite or document refusal.'

GPs who stated that they would contact Children's Social Services/Safeguarding

GP 29 'Consider parents decision, D/W parent, possibly D/W safeguarding.'
GP 48 'Contact the child's parents. If no luck – social services.'
GP 33 'Talk to parents (by nurse or GP), document parental refusal, inform s. [social] services if additional concerns.'

Responses when a child is not registered with a dentist

Responses of GPs when asked to explain why they thought when a child is not registered with a dentist it is of equal concern as a child who has not had all the recommended immunisations:

Examples of GP responses that linked a lack of compliance with dental registration as a possible indicator of child neglect

GP 5 'Never really considered this before. I would think that not attending for routine health checks whether dental or immunisations may reflect neglect or a struggling family.'
GP 31 'Shows neglect by parents.'
GP 32 'Shows lack of parental concern and issues of poverty.'
GP 34 'Dental health has a huge impact on general health and early problems indicate a bigger issue of care etc. at home.'
GP47 'to be considered as child neglect.'

GPs who expressed an awareness of the impact of dental health upon systemic health

GP 30 'Poor dental health implicated in heart disease/diabetes.'
GP 34 'Dental health has a huge impact on general health and early problems indicate a bigger issue of care etc. at home.'

Reasons for dental care registration not being supported

Grouped themes that emerged from the explanations GPs provided who did not support the statement that 'it is of equal concern if a child is not registered with a dentist compared to a child who has not had all their immunisations.'

GPs who perceived a lack of NHS dental care provision on the IOW as an explanation for and the normalisation of lack of engagement with dental care

GP 17 'But there is a shortage of dental care on the island.'
GP 52 'I regard caries in a child as a sign of needing dietary advice. The problem of access to a dentist is the renowned "inverse care law." There are too few NHS dentists in our socially deprived area, and many of them are trained abroad and not considered gentle or understanding by our patients! (I have to pay privately to see a dentist). Friends of mine, living in different areas on the mainland, have excellent, free NHS dental care – of course! Here, NHS dental is only available to many patients as an emergency service only.'
GP24 'But only because a) I hadn't thought along the lines of this Q. b) locally we have a shortage of dentists so not necessarily sinister.'

GP expression of possible relinquished responsibility when considering child dental health

GP 6 'Although I am not responsible for dental health.'
GP 40 'But I believe this should be the dentists' concern.'
GP 33 'Very important but I don't think parents think of this and many parents aren't registered with dentists themselves.'
GP20 'We have enough to do, parents must take some responsibility.'
GP3 'I think, basically there is a trust that parents will get child registered if needed. School also examines teeth as well. Follow it up with dental reg.'

GPs who express a lack of knowledge of patient registration with a dentist due to the lack of a record in the medical notes

GP 2 'Concern but I would not know if registered with a dentist.'
GP 19 'But I would not be aware of their dental registration unless it was volunteered.'
GP15 'Immunisations – we know if somebody has had them or not but whether they are seeing dentist or not – information unavailable to us to advise further.'
GP54 'We have no information about registration with dentists. If I do mention that child needs to see a dentist, I am often told "but I can't find a dentist, and cannot afford private dentist." Try telling them that dental health should have priority over financing cigarettes and the newest mobile phone.'

GPs who belief that parents do not themselves prioritise their child's dental health

GP54 'We have no information about registration with dentists. If I do mention that child needs to see a dentist, I am often told "but I can't find a dentist, and cannot afford private dentist." Try telling them that dental health should have priority over financing cigarettes and the newest mobile phone.'
GP 33 'Very important but I don't think parents think of this and many parents aren't registered with dentists themselves.'

GPs who do not perceive dental health to be as important as communicable disease

GP11 'Bad teeth not a risk to the rest of the population.'
GP12 'Serious illness versus tooth decay.'
GP4 'Vaccination infections are more immediately life threatening, meningitis, tetanus, polio.'
GP25 'Communicable diseases potentially more serious/life threatening.'
GP26 'Children lose their teeth anyway.'
GP51 'Teeth are not contagious.'
GP22 'Feel teeth not that important.'
GP8 'Because I don't routinely ask if registered with a dentist but I would discuss if due imms [immunisations].'

Implied lack of financial incentive for the GP as an explanation for lack of engagement of the GP with patients' dental care

GP 21 'Dental health is important from 12 months of age but not a concern for us in terms of QOF [Quality and Outcome Framework].'

Summarised data

GP interaction with dental colleagues:

Half of the GPs did and half did not know the identity and location of dentists within their patients' geographical area. The majority of GPs (91%) had never liaised with their dental colleagues regarding the care of a mutual paediatric patient (Table 2).

Integration of dental examination into general practice:

Sixty percent of GPs reported that they did not formally examine teeth even when examining the throat of a child and 67% of GPs do not routinely comment on their patients' dentition (Table 2). Time constraints and lack of training in dentistry were the two most commonly disclosed impediments that prevented the GPs from routinely examining children's teeth. When asked about their awareness of the state of child dental health on the IOW, one third believed dental decay was an extensive problem, one third believed it was not a problem and one third could not comment.

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Formal dental training of GPs:

Ninety-six percent of the GPs in this study had never received any formal dental training and yet there was no significant difference between the GPs who did and did not feel confident in diagnosing dental decay ($p = 0.27$)

None of the GPs in this survey work at a GP practice that records patient's dental registration status, instead a gap is left in the child health record. In six cases, the GPs stated that the reason for this was that they believed that lack of child registration with a dentist is not as concerning as that of a child who has not received all their routine immunisations.

GPs' perception of the importance of dental care in preventative medicine:

Half of the GP respondents believed that dental registration was of equal importance to immunisations.

However, half believe immunisations to be more important (Table 2). Narrative responses from nine GPs highlighted that some regard communicable disease as more important than chronic and non-infectious disease in children. Fifty-two GPs responded with examples as to how they would actively proceed if a child had not received all recommended immunisations (Appendix 2).

Some GPs reported that they would actively seek explanations from parents who demonstrate a lack of perceived adherence with childhood immunisations: *'to state reason why'* (GP1), *'pursue them'* (GP4) *'verbal pressure'* (GP11), *'write to them repeatedly'* (GP12). This pro-activism was not replicated in their response as to how they would proceed if a child was not registered with a dentist.

Dental health and child protection

Lack of compliance with immunisations by parents raised concerns among all GPs regarding a child's welfare; in some cases, resulting in disclosure to health visitor and children's social services (CSS). However, this unanimous response did not apply to a lack of child dental registration, with only five GPs specifically mentioning that such status should be considered as possible CN. A theme emerged that some GPs perceive there to be a problem of access to dental care on the IOW, this was seen in three of the GP responses.

Some GPs expressed a view that parents have to take some responsibility for their child's dental health and yet such opinion was not replicated in the overall response to a lack of parental compliance with childhood immunisations.

'We have enough to do, parents must take some responsibility,' GP20 said in response to answering whether lack of registration with a dentist was of equal concern to poor immunisation compliance, yet the same GP stated that in the event that a child had not received the recommended immunisations they would, *'contact parents/inform health visitor.'*

GPs clearly recognise that they have a role in child protection and in response to shared concerns from a dental colleague, 51% of GPs (95%, CI = 38.7–63.3) reported that they would contact the parents of the child themselves. The majority of GPs who answered this question would either advise their dental colleague to contact CSS or they would contact the parents and arrange follow-up.

Discussion

The belief that some GPs in this survey expressed, that teeth are not important to child health and welfare, lacks an awareness of the potential pain and suffering that children with neglected dental decay experience and their increased risk of potential long-term health consequences both of a physical and psychological nature.[4,19] What is more, such a belief also underestimates the potential risk for the development of acute life-threatening sepsis as a consequence of the development of dental abscess.[2,20] This lack of awareness, highlights the need for dental training to be included in medical general practice training.

A recommendation in the management of dental neglect is that doctors should be routinely looking in the mouth and teeth when examining a child.[2] However, in this study it is evident that, for reasons most commonly cited as time constraints and lack of training, GPs do not examine children's mouths and teeth and many feel that it is not their responsibility to do so.

Only five GPs mentioned a lack of dental registration in the context of CN, this suggests a lack of awareness of the implications of DN as a marker of possible wider CN. The comment '*children lose their teeth anyway*' (GP 26) accompanied by a normalisation of poor or absent teeth by GPs within their patient population may undermine the timely identification of DN if accompanied by beliefs such as *'locally we have a shortage of dentists, so not necessarily sinister'* (GP24) when asked whether lack of dental registration was of equal concern as poor parental compliance with immunisations.

This lack of implied GP engagement is also reflected in the belief that parents obtain child registration with a dentist if required. This could imply a reactive rather than proactive response to dental health – that is, a parent should only seek dental care for their child if there is already established pathology that requires treatment. The idea of health education, promotion, surveillance and disease prevention, whilst clearly accepted and promoted in some spheres such as childhood immunisation, is not adopted or prioritised when the issue of dental health is raised in examining the holistic paediatric practice of some GPs and yet 'screening' is listed alongside immunisations in the NICE guideline titled *'Child maltreatment'*[1] followed by the explicit instruction that healthcare practitioners should 'consider neglect if parents or carers have access to but persistently fail to obtain treatment for their child's dental caries (tooth decay)'.[1]

Dental health is mentioned and promoted in the parent held child-record,[26] but some GPs surveyed in this study, while not examining children's teeth, also do not unanimously enquire as to whether a child is registered and attending regular appointments with a dentist. Some of the explanations provided as to why such questions were not asked of parents, arguably demonstrate a degree of passivity. Perhaps such enquiry should be added to the undergraduate training of doctors when learning how to undertake a paediatric consultation.

In addition, while dental health is included in the 'My personal child health record book'[26] it features within the sub-section of 'Your child's firsts and growth charts', arguably undermining its clinical importance. Perhaps dental health should be included alongside that of the immunisation schedules in the 'Screening and routine reviews' subsection of the parent-held child health record. In addition to a lack of GP enquiry into children's dental health, there is also no space in the parent handheld record for a dentist to record their clinical findings and recommendations – a missed opportunity for written communication to parents and the sharing of information with other healthcare professionals, including the health visitor and GP.

There is also a belief echoed by GPs 54 and 33 in this study that parents do not prioritise or perceive the dental health of their children to be important. Examination of these perceptions are beyond the objectives of this study, but such belief that this study raises, should not be used to justify GPs' lack of engagement in child dental health.

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It is arguably an apparent lack of importance placed within parent targeted information and GPs' own beliefs that conveys a sense of the trivialisation of the oral health of children which extends beyond and into the psyche of the medical and wider general population and may support the belief expressed by GPs 33 and 54 – especially when terms such as 'Top tips for good dental health',[26] are employed in parent-targeted literature, which arguably is comparable to the language and phrases employed in popular throw away magazines, thus serving to undermine its importance.

Children require supervision with teeth brushing until they are at least 7 years old.[2] Visiting the dentist and cleaning a child's teeth should not be seen and listed as a 'tip', but a requirement of responsible parenting and one that is measurable and recordable as an additional means to ensure and identify issues of safe guarding.

One GP reported a belief of insufficient NHS dental provision on the IOW with perhaps underlying cultural differences (GP 52): *'There are too few NHS dentists in our socially deprived area and many of them trained abroad and not considered gentle or understanding by our patients'*. Such implied prejudices may serve to undermine co-operation and communication amongst health professionals and could prove an impediment to the timely identification and intervention in a case of CN. A lack of collaboration between GPs and dentists which was observed in the findings of this study may reflect a lack of need to do so. However, a study revealed that of the 67% of dentists who identified potential child neglect in their career, only 29% had ever made a child protection referral.[39]

A study using fictitious vignettes examined the threshold at which dentists, hospital paediatricians and nurses recognise dental and child protection co ncerns and found this to be different amongst the professional groups, with disparity also in the levels of training in child protection that the different professionals had received.[19] A finding of the study was that knowledge around physical signs of potential child abuse was poorer amongst dentists, who may miss the opportunity to identify signs (in addition to dental health) of neglect and child abuse.[19]

As was echoed in the results of the GPs in this study, hospital paediatricians and nurses, whilst more aware of systemic signs of child neglect and abuse, lack specific training in dental health and as a result may fail to raise poor dentition as a potential concern and marker for neglect. The paper concluded with the recommendation that all health professionals would benefit from collaborative training.[19]

Consistent findings resulting from multiple serious case reviews where a child has died as a consequence of abuse and neglect is that there has been inadequate communication between health care professionals.[4] The current lack of a comprehensive healthcare record which includes dental health may also act to exacerbate poor communication and cohesive working between professionals. It is recognised that dentists possess unique clinical information.[4] However, in the absence of a comprehensive, cohesive healthcare record, though this information may prove crucial in the diagnosis of neglect, if left isolated (as is currently the case), there is a danger the information possessed by dentists could be undermined in its potential significance and importance.

'Identifying or excluding child maltreatment involves piecing together information from many sources so that the whole picture of the child or young person is taken into account.'[1]

Perhaps there is also a lack of awareness among GPs as to the unique skills dentists possess, indeed 96% of GPs in this study had not received any formal training in dentistry in their career, yet there was no statistical significant difference between those GPs who felt confident in diagnosing dental decay versus those who did not. Studies suggest that the diagnostic techniques required to clinically assess dental caries are not straightforward.[40] Staging the progression of non-cavitated lesions early on may enable the application of treatment strategies to abate further tooth destruction, but this requires the implementation of various diagnostic techniques acquired through formal training.[5,40] The absence of such skill acquisition in the GP population studied undermines the confidence that the GPs in this survey expressed in their ability to diagnose dental decay and may in the absence of regular dental screening lead to a lost opportunity for preventive dental treatment to be employed. Severe untreated dental caries, obvious enough for a lay person or other health professional to diagnose, is of particular significance and concern[5] and at the point of obvious diagnosis, the dentition may be beyond the timely opportunity for restorative treatment.

Strengths and limitations

This is an original piece of research and to our knowledge a study has never been undertaken that specifically examines GPs' awareness of child dental neglect. A more comprehensive picture than this study has provided, could be established by engagement with dentists, children and extending the geographical location to improve representation of levels of dental engagement within the NHS as a whole. This study does perhaps highlight the permissive down regulation of the financial prioritisation of dental health within the political, national and public health agenda.[11]

The findings of the study are arguably limited by the response rate of 52%. This finding may be indicative and reflect the lack of priority GPs give to dental health that was seen in many of the responses received. The composition of the study survey was based upon anecdotal findings of clinical practice, discussion with colleagues and was only reviewed by the authors of the article. It was not piloted. The survey itself and the themes that emerged and that were extrapolated from the data were undertaken by the first author only and are therefore vulnerable to the influence of bias.

Whilst the validity of this investigation as a true representation of GP engagement and ability in the practice of dental health may be limited, it could act as a pilot study with a view to the future expansion and further investigation of this important topic.

Implications for practice

Currently in the UK, a GP's income is partially reflected in their ability to reach health targets set by and financially incentivised by UK government (QOF).

'The Quality and Outcomes Framework (QOF) is the annual reward and incentive programme detailing GP practice achievement results. It rewards practices for the provision of quality care and helps standardise improvement in the delivery of primary medical services.'[41] Therefore, the comment 'Dental health is important from 12 months of age, but not a concern for us in terms of QOF' (GP21) is perhaps illuminating and raises the question of the consequence of health priority setting when a service or the management of a particular condition is financially incentivised. When asked about poor parental compliance of immunisations, some GPs highlighted the importance of vaccinations (which are financially incentivised) in preventing serious disease[42] and all GPs expressed a will to actively

follow up the parents deemed as non-compliant. Yet when the issue of lack of dental registration is raised, (not financially incentivised) the response was less well defined.

This apparent difference may also reflect a belief regarding responsibility and job description, reflected in the comments some GPs made around who they feel should be responsible for child dental health. In the current healthcare system, a dentist cannot take responsibility for a patient who is not registered with them.

The assumption that 'I think, basically there is a trust that parents will get child registered if needed. School also examines teeth as well.' (GP 3) is undermined by a lack of awareness, because dental surveillance practice has since changed.[11] The lack of formal training in oral health for GPs may also support their belief that they are not responsible for dental healthcare in their patients. From this survey, it appears that GPs are untrained in formally identifying dental pathology, are often the first point of contact for health, yet lack an awareness of the importance of dental health to both systemic health and as a marker of CN. There is both a lack of collaboration between dentists and GPs on the IOW and a lack of a universal health record which includes dental registration and health within the NHS. Without the inclusion of dental health status, the incomplete formal child health record has the potential to undermine the opportunity to identify DN and CN, the communication of this and sharing of vital information. Such findings and concerns were also replicated in a study of public health nurses' assessments of oral health in preschool children.[6]

DN is a marker of wider CN, but dental health is arguably 'neglected' by society and a health system that perhaps lacks an awareness and appreciation of the importance of and need for holistic practice for children.[11] Internationally, DN has only in recent years been recognised as an area of oral health concern and has been highlighted in the recent past as a having been politically neglected on the global stage.[43] At a community level this may be reflected by the ubiquitous presence of dental neglect within the general population, which may have led in itself to the desensitisation of health practitioners to its wider social and health consequences. This factor was expressed by a dentist who, in a previous study, stated that whilst dental disease in children may be marker of neglect; it can be ubiquitous in some financially deprived populations and as such, if every time they saw a child with dental disease, they considered child neglect, it would result in raising this as a concern in every patient they examined.[19]

This statement was echoed by some of the GPs in this study, who also practise in an area that has child poverty levels worse than the national average.[37] The socioeconomic status of a child is a recognised cofounder for dental caries.[12]

There are mixed messages within the guidance literature around child dental protection echoing a reactive rather than preventive/proactive approach when advising both practitioners and parents/carers about dental care. NICE states 'consider neglect if parents or carers have access to but persistently fail to obtain treatment for their child's dental caries (tooth decay).'[1] The use of the phrase 'access to' implies a recognition that there could be inequalities in the provision of dental care/impeded parental access to this within the UK and yet the parent child handbook[26] clearly states that all parents should be seeking dental care for their children and that dental care provision for children is free on the NHS.

What is more, within the NICE guidelines, it is only after a child presenting with dental caries fails to be brought for treatment by a parent that issues around possible neglect are raised.[1] This serves almost to normalise dental caries as a given and echoes the rather accepting approach expressed by some GPs in this study – that is, parents should seek dental care for their child once there is established dental pathology. 'I think, basically there is a trust that parents will get child registered if needed.' (GP 3)

Perhaps the NHS', as a health organisation, apparent resigned approach and almost philosophical acceptance of dental disease and caries in children needs to be challenged. We would not accept any other unmet health need in a child in the UK and, as is demonstrated in this study, the lack of compliance with immunisations raises concern unanimously in the GP population surveyed. Yet somehow dental disease in children does not raise such equal concern and would appear socially and medically accepted.

Dental caries is one of the most prevalent chronic diseases worldwide.[2,40]

Whilst the financial cost to the NHS of paediatric hospital admissions for dental extractions is extensive,[19] the personal cost to children is arguably much greater and yet dental caries is preventable and treatable.[2]

An opinion expressed in the British Dental Journal was that 'it seems socially and professionally acceptable for a child to experience serious dental pain, to have difficulty in sleeping and eating and to have several abscesses without the authorities intervening.'[11]

Conclusions

Ultimately, children are reliant upon their parents and the state to ensure their welfare. They are currently vulnerable to a lack of cohesion between services, and a passivity in the active willingness by some health professionals to accept responsibility for children's dental health. This study demonstrates that currently, in the absence of formal attendance at a dental surgery and a universal health record that is accessible by all responsible for child health and welfare, a child's dental health within the NHS system may be neglected, its importance undermined and the timely detection of DN and CN may be impaired.

GPs have more contact with families than dentists[19] and if as their default role as frontline workers of the NHS, GPs are to bridge the current gap in dental service provision, they require sufficient knowledge and training to recognise signs of oral disease and neglect.[19] This study demonstrates that they are currently ill-equipped to detect DN, to recognise its importance to child health and welfare and require further training alongside their dental and nursing colleagues.

However, GPs are not dentists and already have many responsibilities. Ultimately public health policy must be implemented to address the need for greater awareness and investment in improving the prioritisation of universal free access to dentistry, a universal health record that includes dental registration status and dental health, coupled with amendments to the 'My personal child health record'[26] to raise the importance of dental care and screening alongside that of immunisations. This may serve to raise its level of health importance from birth in the minds of parents and in turn seek to place a greater prioritisation of child health and welfare within the political and public health arena.

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