

# Enhanced skills in periodontology: evaluation of a pilot scheme for general dental practitioners and dental care professionals in London

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## In brief

NHS care pathways are now being published and this includes a role for dentists with extended skills.

Provides insight to training of dentists with extended skills in periodontology, an area of unmet and increasing need in our adult population.

Inter-professional training is important if we are to use skill-mix effectively.

**Background** The need for periodontal management is great and increasing; thus, the oral and dental workforce should be suitably equipped to deliver contemporary care. Health Education London developed a training scheme to extend the skills of dentists and dental care professionals (DCPs). **Aim** To examine the feasibility of assessing a skill-mix initiative established to enhance skills in clinical periodontology involving the views of patients, clinicians and key stakeholders, together with clinical and patient outcomes in London. **Methods** This mixed methods feasibility and pilot study involved four parallel elements: a postal questionnaire survey of patients; analysis of clinical logbooks; self-completion questionnaire survey of clinicians; and semi-structured interviews of key stakeholders, including clinicians. **Results** Twelve of the 19 clinicians participated in the evaluation, returning completed questionnaires (63%) and providing access to log diaries and patients. Periodontal data from 42 log-diary cases (1,103 teeth) revealed significant improvement in clinical outcomes ( $P = 0.001$  for all). Eighty-four percent ( $N = 99$ ) of the 142 patients returning a questionnaire reported improved dental health; however, responses from hospital patients greatly exceeded those from dental practice. Interviews ( $N = 22$ ) provided evidence that the programme contributed to professional healthcare across four key domains: 'service', 'quality care', 'professional' and 'educational'. Clinicians, while supportive of the concept, raised concerns regarding the mismatch of their expectations and its educational and service outcomes. **Discussion** The findings suggest that it is feasible to deliver and evaluate inter-professional extended skills training for dentists and dental care professionals, and this may be evaluated using mixed methods to examine outcomes including clinical log diaries, patient questionnaires and stakeholder interviews. This inter-professional course represents a positive development for patient care using the expertise of different members of the dental team; however, its formal integration to the health and educational sectors require further consideration.

## Background

Reform of dentistry in England is required, and in progress,<sup>1-5</sup> to ensure patient needs are met in the right time, place and by the right person. Health Education England (HEE),

Public Health England (PHE), Local Authorities (LAs) and NHS England (NHSE) are mandated to identify innovative means to meet the varying health (including oral health) needs of the population.<sup>1,6,7</sup> HEE and its network of local education and training boards (LETBs) now have the responsibility to not only recruit healthcare staff with the right skills and values but also to ensure their competencies and professional development to enable them to deliver excellent patient centred clinical care.<sup>1,7</sup>

Periodontal disease is one of the most common chronic inflammatory oral diseases seen in adults globally.<sup>8,9</sup> It leads to tooth mobility and/or loss,<sup>10</sup> affecting masticatory function, speech, appearance, and nutritional status,<sup>11</sup> which can result in reduced quality of life for patients.<sup>12,13</sup> Evidence suggests that almost half of adults nationally, and

in London, have some periodontal disease, with prevalence of severe periodontitis doubling in the last decade of life.<sup>14,15</sup> This could be attributed to an increase in the ageing population and a decrease in extractions.<sup>16</sup> In addition, the cost-burden of periodontal disease nationally is significant with an estimate of almost £2.8 billion spent in 2008.<sup>12,17</sup> The complexity of periodontal disease makes it a significant challenge for primary care dentists and dental hygienists/therapists, with some studies reporting considerable under-diagnosis and treatment for periodontal disease at the primary care level.<sup>18-21</sup> Furthermore, there has been the suggestion that fee scales and regulations of General Dental Services (GDS) have impacted on the provision of periodontal care within the NHS resulting in progressive de-skilling of clinicians over the years.<sup>21</sup>

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Many members of the dental professions are trained to provide periodontal care. At the routine end of care, periodontal skills are part of the *Scope of practice* of DCPs (both dental hygienists and dental therapists), as well as dentists themselves.<sup>22</sup> While at the more complex end, periodontology is a mono-speciality and one aspect of the speciality of restorative dentistry.<sup>23</sup> There is currently emphasis on gaining additional and enhanced skills training among dentists and dental care professionals, to better meet the needs of the population.<sup>24-28</sup> In line with this trend, the former London Deanery (now Health Education England [HEE], London) established a training programme in clinical periodontology to enhance the skills of dentists and dental hygienist/therapists from primary dental care. Throughout this paper they will be referred to as the 'clinicians'. This was a shared educational and training initiative over a two-year period at King's College Hospital Foundation Trust (KCHT) in south London. The philosophy of the initiative was in line with Steele's 2009 review,<sup>26</sup> the original concept of 'Dentists with Special Interest (DwSIs)'<sup>28-34</sup> and the former London training programme for DwSIs in Endodontics.<sup>35,36</sup> However, this pilot of periodontal care was unique in that it involved training two different skill sets, that is, dentists and dental care professionals from dental hygiene and/or dental therapy together. NHS commissioners were not involved in the process.

Furthermore, roles within the dental team are expanding since the General Dental Council (GDC) announced a change in professional policy whereby since 1 May 2013 dental hygienists and dental therapists, who previously worked under the prescription of a dentist, may provide direct access to patients;<sup>37</sup> this is likely to become an increasing feature of healthcare<sup>38</sup> as the NHS evolves.<sup>7</sup>

The aim of this research was to explore the feasibility of training general dental practitioners (GDPs) and dental hygienists/therapists to develop enhanced skills in periodontics and make recommendations for service delivery and training. The objectives were as follows:

1. To explore the views of patients on their oral health and the dental services provided by the clinicians
2. To assess patients' clinical outcome based on the retrospective analysis of the logbooks of the clinicians
3. To explore the extent to which the perceived aims of the commissioners, educators,

training providers and clinicians have been met through this course

4. To explore the programme's role in supporting clinical and professional development of the dental workforce
5. To identify learning from this project and make recommendations for the future models of dental service delivery in England as well as initiatives for 'enhanced skills training'.

## Methods

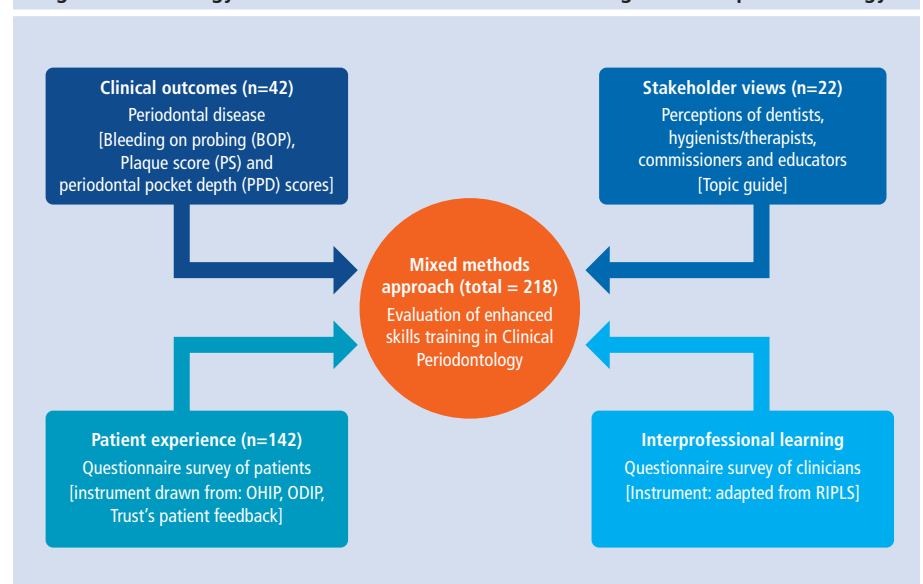
This evaluation was multi-dimensional and utilised a mixed methods approach<sup>39</sup> within a non-randomised feasibility and pilot study. Ethics Committee approval was obtained from the National Research Ethics Committee (13/NS/0102), and research governance approval by King's College Hospital (KCH) NHS R&D committee (KCH 13-143). Data were collected from a variety of sources over a six-month period (October 2013 to March 2014) (Fig. 1), similar to that used for the London DwSIs in Endodontics programme.<sup>35</sup> In addition, clinical data on patients were available for inclusion with the support of the participating clinicians, hospital trust and dental practices.

First, following approval of clinicians, a comprehensive analysis of patient notes included in the logbooks by the clinicians on this course was undertaken. The research team was provided with access to logbooks at the end of programme. Quantitative data on patients, teeth and aspects before and after therapy were entered onto computer and analysed using statistical software SPSS v22.0 and STATA v12.0. The primary aim

was to detect a change in periodontal outcomes of the patient [Periodontal Pocket Depth (PPD); Bleeding on Probing (BOP), and Plaque Score (PS)] after receiving treatment through clinicians on this enhanced skill course. The secondary aim was to measure the effect of other variables and correlation of these outcome measures. Descriptive statistics were used to summarise the patient characteristics. Paired t-tests were used to test the difference in total scores of outcome measures, that is, PPD, BOP and PS pre- and post-treatment. The relationship between the change in PPD after treatment with respect to BOP and PS was tested using Spearman's correlation coefficient. Multivariate linear models were created to test the effect of predictors such as sex, age, smoking history, number of treatment sessions, patient setting (hospital or primary care), and treatment provider (dentist or DCP) on the four PPD score levels.

Second, a postal questionnaire survey of the patients treated by the clinicians during the programme was undertaken; both those identified through log books from hospital and practice, together with those treated in hospital clinical sessions. The questionnaire was compiled from the academic literature on quality of life, periodontal disease, national oral health surveys,<sup>40-42</sup> and the hospital trust's patient surveys at the dental hospital. Trust and practice staff assisted with the survey distribution to protect patient identity. Patients were provided with two reminders in a modified Dillman approach, to reduce their burden, while optimising responses to the questionnaire surveys.<sup>43</sup> Data were entered into SPSS for descriptive analysis.

**Fig. 1 Methodology of evaluation of enhanced skills training in clinical periodontology**



Third, a self-completion questionnaire survey of clinicians enrolled on this programme was conducted towards the end of their course. The questionnaire, which explored clinicians' views on the course, skill-mix and team working, was adapted from an instrument developed at KCL based on the work of Morison *et al.*<sup>44,45</sup> and piloted with dental professionals not involved with the study. The clinicians were provided with reminders in line with Dillman's approach to improve questionnaire responses.<sup>43</sup>

Fourth, and finally, stakeholders including clinicians on the course (dentists and dental hygiene/therapists) and others involved in the programme and delivery of care (HEE commissioners, educators on the programme, dental public health consultants, and a practice owner) were invited to participate in the semi-structured interviews. Invitations were sent by post and paper, including an information sheet and consent form; invitees were subsequently followed up by phone to explore their interest and willingness to participate. Interviews were conducted in a mutually convenient location using a topic guide based

on similar surveys,<sup>35</sup> with interviews recorded and transcribed verbatim. Data were analysed using framework methodology, as described by Ritchie and Lewis,<sup>46</sup> a common method used in health services research.<sup>35,47,48</sup> Based on themes and patterns emerging from the data, a detailed coding framework was developed and agreed through iterative discussion among the authors. The coding framework was then systematically applied to the interview data, using NVivo 9 to manage the coded data.

## Results

### Clinical outcomes examined

All the clinicians were required to record at least four completed cases in their logbook (two each from hospital and practice) during the programme and submit it for assessment. Out of the 19 clinicians on the course, 12 consented to provide access to their logbooks for research purposes resulting in a total of 42 patient records with 'before and after treatment' clinical scores. Fifty-five percent (N = 22) of patients were treated by the dental

hygiene-therapists. A total of 1,103 teeth (maxilla = 548; mandible = 555) remained following treatment and had 'before and after treatment' scores included. Teeth extracted were excluded from this analysis to avoid bias (5.3%; N = 62).

There was evidence of significant improvement in patient clinical outcomes with respect to all three measures: bleeding on probing (BOP), plaque scores (PS) and periodontal pocket depth (PPD) scores. BOP scores reduced by 70%; total plaque scores reduced by 52% (P = 0.001). For periodontal pocket depth (PDD), the average number of teeth with PPD of less than 4 mm before treatment in the maxilla and mandible was 5.4 and 6.5 respectively; and increased significantly after treatment to 9.5 and 9.7 respectively (P = 0.001). A reduction in the average PPD score was seen at tooth, quadrant and jaw after treatment (P = 0.001). Overall, 55% of the total 6,618 sites (six sites per retained tooth) for PPD scores were recorded as improved with 35% sites (N = 2289) having no change in PDD scores (Table 1).

**Table 1** Change in mean PPD score by each tooth, quadrant and jaw after treatment provided by course clinicians

Tooth	Cases (n)	Before treatment (s.d)	After treatment (s.d)	Tooth	Cases (n)	Before treatment	After treatment
Upper right third molar (18)	15	3.74 (0.98)	2.93 (1.00)	Upper left third molar (28)	15	3.94 (1.16)	2.90 (1.21)
Upper right second molar (17)	36	4.04 (1.20)	3.13 (1.23)	Upper left second molar (27)	32	4.34 (1.47)	3.35 (1.28)
Upper right first molar (16)	33	3.66 (1.11)	2.83 (1.01)	Upper left first molar (26)	38	3.90 (1.31)	2.87 (1.38)
Upper right second premolar (15)	36	3.46 (1.22)	2.63 (0.95)	Upper left second premolar (25)	35	3.30 (1.02)	2.46 (0.62)
Upper right first premolar (14)	39	3.52 (1.46)	2.54 (1.19)	Upper left first premolar (24)	35	3.42 (1.14)	2.44 (0.83)
Upper right canine (13)	42	3.42 (1.41)	2.5 (1.13)	Upper left canine (23)	41	3.19 (1.11)	2.31 (0.81)
Upper right lateral incisor (12)	39	3.07 (1.12)	2.24 (0.97)	Upper left lateral incisor (22)	39	3.0 (1.22)	2.32 (1.17)
Upper right central incisor (11)	36	3.19 (1.63)	2.44 (1.39)	Upper left central incisor (21)	37	3.10 (1.27)	2.15 (0.69)
Lower right central incisor (41)	38	2.69 (1.60)	1.85 (1.03)	Lower left central incisor (31)	38	2.54 (1.21)	1.81 (0.64)
Lower right lateral incisor (42)	40	2.71 (1.51)	1.97 (1.12)	Lower left lateral incisor (32)	37	2.65 (1.16)	1.83 (0.71)
Lower right canine (43)	41	3.01 (1.40)	2.19 (1.16)	Lower left canine (33)	40	2.79 (1.16)	2.03 (0.86)
Lower right first premolar (44)	39	3.38 (1.48)	2.45 (1.15)	Lower left first premolar (34)	40	3.29 (1.44)	2.40 (0.94)
Lower right second premolar (45)	38	3.22 (1.30)	2.31 (0.97)	Lower left second premolar (35)	37	3.42 (1.65)	2.43 (0.81)
Lower right first molar (46)	32	3.99 (1.49)	3.00 (1.27)	Lower left first molar (36)	34	3.98 (1.27)	3.23 (1.20)
Lower right second molar (47)	31	4.68 (1.46)	3.41 (1.17)	Lower left second molar (37)	34	4.41 (1.40)	3.42 (1.29)
Lower right third molar (48)	19	4.33 (1.82)	3.37 (1.50)	Lower left third molar (38)	17	3.95 (1.86)	3.18 (1.54)
<b>Upper right quadrant</b>	<b>42</b>	<b>144.40 (43.56)</b>	<b>105.04 (38.47)</b>	<b>Upper left quadrant</b>	<b>42</b>	<b>145.73 (42.18)</b>	<b>101.00 (35.12)</b>
<b>Lower right quadrant</b>	<b>41</b>	<b>144.87 (50.25)</b>	<b>101.63 (41.73)</b>	<b>Lower left quadrant</b>	<b>41</b>	<b>144.29 (60.08)</b>	<b>100.95 (38.48)</b>
<b>Maxilla (total score)</b>	<b>42</b>	<b>290.14 (79.5)</b>	<b>206.04 (68.92)</b>	<b>Mandible (total score)</b>	<b>42</b>	<b>286.61 (105.13)</b>	<b>199.92 (78.26)</b>

Note: a. For all scores P value was < 0.01; b. Teeth extracted were excluded from the analysis

In addition, there was no evidence for the change in PPD scores being affected by age, sex, smoking history, number of treatment sessions, patient setting (hospital or primary care) or treatment provider (dentist or DCP). Nevertheless, a positive correlation was seen between the change in average PPD and BOP score, for both maxilla (N = 38) and mandible (N = 38) respectively [maxilla (R = 0.62; P = 0.0001); mandible (R = 0.47; P = 0.003)]; however, the change in total plaque score was not correlated with the change in total PPD scores.

### Patient experience and outcomes

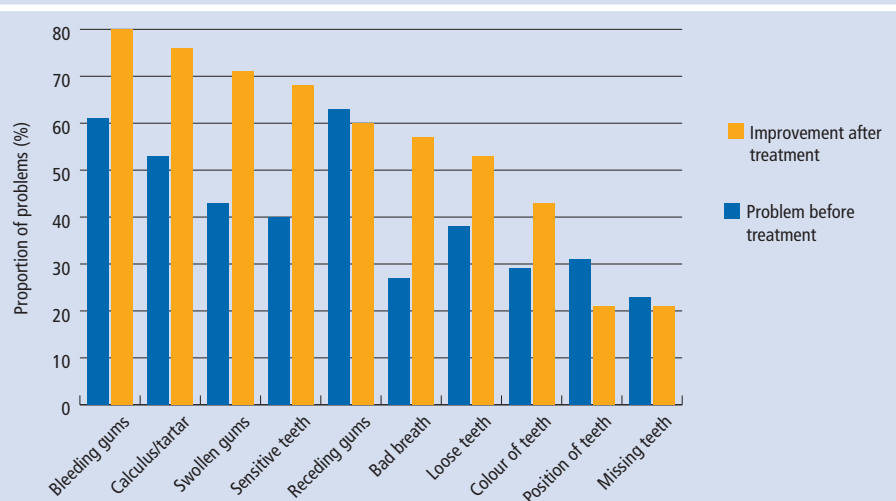
A total of 309 patients were identified as having been under the care of clinicians during the programme and were included in the survey; 142 questionnaires were received giving a response rate of 46% for the study, with just over half of the responding patients having been treated by dental hygienists/therapists (58%; N = 82). The majority of patient respondents were female (62%, N = 88) and the largest age-group was 55-64 years (31%; N = 44) within an overall range of 25-74 years. 'White British' (50%; N = 68) was the largest ethnic group, followed by 'Black African' (15%, N = 20) and 'Black Caribbean' (13%, N = 18).

The majority reported the most common reason to visit a dentist was for a regular check-up (64%; N = 88). Two thirds (66%; N = 91) of patients reported attending a dentist at least once every six months, with 93% (N = 127) attending at least once in a two year period, and the rest only when in trouble or less frequently (7%; N = 10).

A variety of periodontal problems were reported by patients before receiving treatment from clinicians (Fig. 2), most notably issues related to receding and bleeding gums. Quality of life was affected, with almost half (49%; N = 70) reporting having felt self-conscious 'occasionally to very often'; 45% (N = 64) having felt embarrassed, 44% (N = 63) having experienced discomfort while eating food and 44% (N = 62) being tense.

After treatment, considerable improvement in specific items was reported; the majority reporting their dental health 'improved a lot' (62%; N = 73), with only 22% (N = 26) reporting it to have 'improved a little'. Almost all the patients (more than 96%) rated the courtesy of dental hygienist/therapists (97%; N = 128), and dentists (96%; N = 131) as 'excellent' to 'good'.

**Fig. 2 Proportion of dental problems before and after treatment reported by patients (N = 142)**



Note: Responses for 'fairly often' and 'very often' for dental problems reported by patients prior to treatment were grouped together (in blue) Responses for 'improved a lot' and 'improved a little' for improvement seen in dental problems after treatment were grouped together (in red)

**Fig. 3 Perceived aims and expectations of enhanced skills training in periodontology in London**

<p><b>Service innovation</b></p> <ul style="list-style-type: none"> <li>• A service delivery model to provide training</li> <li>• Reduce hospital patient waiting lists</li> <li>• Meeting increasing need in the population</li> <li>• Addressing a service gap in providing periodontology treatment in primary care</li> <li>• Developing enhanced skills in primary care</li> </ul>	<p><b>Quality &amp; Outcomes</b></p> <ul style="list-style-type: none"> <li>• Enhancing patient care within dental practices</li> <li>• Improving efficiency, effectiveness and cost-effectiveness of primary care services</li> <li>• Improving communication and team working within the dental team</li> <li>• Addressing legal implications</li> </ul>
<p><b>Educational</b></p> <ul style="list-style-type: none"> <li>• Workforce development through addressing educational needs to improve knowledge and skills in periodontology</li> <li>• Integrating service provision and education</li> <li>• Providing affordable education, relevant to primary care</li> <li>• Testing a skill mix model of training</li> <li>• Providing an environment for shared learning through skill mix</li> <li>• Seeking a diploma</li> </ul>	<p><b>Professional development</b></p> <ul style="list-style-type: none"> <li>• Personal and professional development through enhancing skills</li> <li>• Enhancing career pathway within primary dental care (and teaching)</li> <li>• Professional satisfaction in providing improved care for patients</li> <li>• Increasing financial reward</li> <li>• Preparing for direct access</li> </ul>

### Clinician views

Twelve of the 19 clinicians on this course (six dentists; six DH/T) returned the completed questionnaire giving a response rate of 63% for the survey. Two-thirds (75%; N = 9) of the respondents were female and 'British' (42%; N = 5); almost all had additional qualifications (N = 11) and were working in predominantly NHS dental practice (42%; N = 5).

The clinicians reported universal (100%) support for team working and shared learning with other members of the dental team. Almost all the responding clinicians (92%, N = 11)

welcomed the opportunity to train alongside other team members and all reported to have developed a positive professional relationships (100%, N = 12). Over half of the responding clinicians (58%, N = 7) felt that the training they received not only reinforced their theoretical knowledge in periodontics but also helped them clinically, equipping them better in diagnosis and treatment planning of patients.

While none disagreed, the majority were neutral (55%), or positive (45%), regarding the training; dissent was related to the organisation and delivery of training 83% (N = 10), which

parallels the qualitative findings. The majority of dental hygienists/therapists (67%) reported that their skills will be used more after completion of this training; however, the majority of dentists (67%) reported a neutral view suggesting no change in their approach.

### Stakeholder views

Interviewees (N = 22) included course participants, collectively referred to as clinicians [dentists (D) N = 4, hygienists/therapists (H/T) N = 8], HEE officials, referred to as training initiators (TI, N = 2), a dental public health consultant (PHC, N = 1), education and training providers referred to as educators (E, N = 6), and a practice owner from a practice where a course clinician was employed (PP, N = 1). The perceived vision of the training for clinicians and key stakeholders revolved mainly around following four domains: 'service innovation', 'quality & outcomes', 'professional development', and 'educational' (Fig. 3).

#### Service innovation

Developing a primary care periodontal service through enhanced skills training to meet the increasing need in the population was one of the main aims of the course identified by all interviewees.

*We carried out surveys of adults... and one of the key findings was the amount of periodontal disease in the population, it was worryingly high, and when we spoke to practitioners, one of the things they mentioned was the difficulties in getting patients with problems beyond their skill set to be seen, [...] they would refer patients to the hospital and the hospital would just answer those questions back. So err with that in mind I believe that there should be opportunities for those patients to be seen [...] within primary care and for those skills to be developed. I think in developing a service, it should relate to the need of the population, and so if the need is there, then the service is there. (PHC219)*

Clinicians, educators and HEE representatives highlighted service gaps in providing periodontal treatment in primary care and felt that this training course was important in addressing these.

*I think the aim of the training, first of all, I think there is a gap in general practice, where, I think a lot of general practitioners, they're spread quite thin and I think perio's the first one to suffer. (E211)*

#### Quality and outcomes

HEE representatives, educators and the majority of clinicians considered improving patient care within primary care dental

services as one of the aims of the enhanced skills training course. It was felt that this would contribute to improving the effectiveness, efficiency and cost-effectiveness of primary care services in the longer term.

*(The main aim is) to ensure that patients have quality care, with trained personnel at the level of difficulty that they are trained for, in their local setting, rather than having delayed treatment, more complications and higher cost to the NHS, so this was a cost saving, it was a time saving, and it was getting patients to treatment, where they need to be treated. (TI 192)*

As part of improving outcomes, a few participants also reported that encouraging and developing good communication and team working between dentists and dental hygienists/therapists.

Another perceived aim discussed by some clinicians and a course educator was to improve clinicians' ability to diagnose and determine prognosis which would lead to improved patient outcomes, and protect against litigation, as illustrated by the quote below.

*General practitioners are also, being aware that they're weak in that area, but a, they're not, they don't feel like they're being remunerated for it, so, therefore, they're leaving it, but then there's the medico legal side of it as well, and I think they're realising the medico-legal aspect of it and that they can't ignore it, but I think their training, may be not great in terms of 'hands on'; everybody knows maybe how to diagnose but when it comes to how to treat it, how to diagnose, to determine prognosis for example... I think that's where this course really came into its own. (E211)*

#### Educational

HEE representatives, educators and clinicians all reported that one of the main aims of the course was to address educational needs, to develop the workforce through the improvement of knowledge and skills in periodontology. And to testing out a skill mix model of training in a shared learning environment, where dentists and DCPs could learn from each other. These points are illustrated by the quotes below.

*(The aim of the training was) to encourage good communication between dental care professionals and dentists so that they both appreciated their respected roles and realised some common paths, and to advance their knowledge and skills with regard to treating periodontal disease. (E200)*

*(One) aim is really to see how it would work to put dentists and dental care professionals, in this*

*case, hygienists, together in the same learning environment to see how they interact and whether it's a good model to actually train the two different skillsets at the same level. (ID201)*

*You've got to have a purpose in life you see, at the present moment dentists feel deskilled in many respects and that's partly because they don't feel incentivised; but here, of course, it's the higher education and training. (TI 192)*

Another benefit of the training perceived by clinicians and educators was the affordability of the training and the fact that it could be fitted into their working life in a general practice. HEE representatives and educators generally agreed that the vision for the course from the outset had been to provide a qualification and all clinicians stated that one main aim of attending the course was to gain a qualification in the form of a diploma. This anticipated integration into the educational process had not occurred and was a major source of concern for the participating clinicians.

#### Professional development

Clinicians reported that personal and professional development was one of their main aims for taking the course. Therefore, the course was viewed by some as a means of enhancing the career pathway within primary care and a potential opportunity to increase their earnings. Clinicians on the course highlighted the professional satisfaction from being able to improve the care they were able to provide to their own patients within their practice. While dentists would have valued more emphasis on surgical periodontics, the course focused on non-surgical care, which for some was a frustration. Some of the dental hygienists/therapists reported entering the training course as a part of their preparation for providing care on 'direct access' to patients, with the aim that the course would improve their confidence and skills in treating patients, as can be seen in the quote below, whereas dentists were interested in surgery.

*Well the aim for me was to enhance my skills obviously in clinical perio, knowing what was going on two years with the Dental Council and then thinking about introducing direct access for hygienists, I was pre-empting that thinking well it would be good do anyway but if that did come in then we would also have been in trained diagnosis, treatment planning and treating and assessing a new patient. So probably my main aim initially was pre-empting that and allowing me to complete a lot more treatment in the practice and be seen by the other, well*

by all the dentists in the practice to be able to do advanced treatment confidently and competently. (HT 195)

*I know all the dentists want to get a lot more clinical experience out of it and want to be doing surgery and want to be a lot more hands on. (D, ID199)*

However, there was evidence that the diagnosis and non-surgical management formed an important aspect of the training:

*My technique has changed, so what instruments I'm using, I'm a lot more confident with the actual root surface debridement and the actual techniques, so that has all changed. [...] I think those are the main things. So diagnosing I'm much more confident with, the actual treatment side of it – so oral hygiene and root surface debridement. I'm not doing any surgery so I know. I'm now a lot more clear about when someone needs surgery and when to refer those kinds of cases. (D, ID199)*

### Health policy and systems

It was strongly recommended that funding systems should be put in place to enable clinicians on future inter-professional training courses in enhanced skills in periodontology to apply these skills in a practice setting.<sup>49-53</sup> The need for health system reform in order to support the application of enhanced skills in practice to improve patient care was identified with a continuous programme of training to be established rather than a one-off course.

*When we have trained these people, what is going to happen to them? We want them to deliver a specialist service in enhanced care, with enhanced skills, so how is that going to happen, where is the funding going to come from, who is going to appoint them, what is the contract going to look like, all that should have been decided before so as soon as they finish it happens. I think the initiative is a good one, my view is that [...] the long term impacts [...] should have been thought through and determined, I believe that a one-off training (course) doesn't necessarily deliver the capacity that is needed to provide care for the patients, and so there should be a continuous programme, and I believe that at the end of the training, what is needed to enable these people that have been trained to provide the service should have been determined and all the systems put into place. (PHC 219)*

The need for NHS funding systems to support the appropriate use of enhanced skills in primary care in the care pathways that are currently being developed<sup>4,6,54,56</sup> was recognised, as illustrated in the following quote.

*I think from the commissioners' point of view as well, the move nationally is around developing care pathways, and as you know the concept of a care pathway is a journey for a patient where the patient is seen in the service most appropriate to their needs, so you want to commission a complete care pathway which starts off from, by the patient accessing a general dental practice, on the other end of the scale accessing a hospital service, and so in order to deliver that pathway you need the intermediate service, so its commissioner wants to commission a complete care pathway. (PHC 219)*

### Discussion

This paper presents the findings of an initiative involving inter-professional education to provide extended skills training in periodontology, which the authors believe is the first of its kind. The findings from this mixed methods evaluation suggest that the programme set out to contribute to service, education and professional outcomes, alongside improving quality of care and patient outcomes, and fulfilled these objectives to some extent. It tested the feasibility of assessing patient-outcomes, clinical and reported, which were positive overall. Furthermore, the evaluation highlighted the importance of formalising service, educational and professional outcomes. Thus, there is important learning from the pilot in relation to the feasibility of training and its evaluation, as well as expectations and outcomes for health professionals which can inform policy, practice and research.

First, patient care should be central to any professional development initiatives and there was clear evidence from two phases of the study that patients benefited from the care received. The findings from the clinical records in clinicians' logbooks demonstrated improvements in periodontal health, across patients responding to the survey from practice and hospital settings. It has, however, to be acknowledged that these patients are likely to represent clinicians' best cases during this period of oversight and training and there was no blinding. Triangulation, provided by the wider patient survey, supported the clinical findings with a reduction in periodontally-related symptoms as a result of their care. Additionally, patients were very supportive of the way they were managed and overall satisfaction ratings were high. One further caveat is that as many of these patients were treated in hospital, rather than under practice conditions, they may

have received more time with clinicians. Thus, future research should follow patients managed by those with enhanced skills training in their natural practice settings, involve independent examiners and consider cost-effectiveness of care, if services are to be expanded to meet wider patient needs.

Second, this course has a clear role in supporting the professional development of the dental workforce. With any new initiative, it is likely that the course applicants are not representative of their profession and are likely to include enthusiasts. Skills at baseline were not assessed, and thus it is not possible to determine if they improved; however, there was evidence of inter-professional learning and good patient outcomes. It should be noted that not all clinicians achieved successful completion of the course; however, the fact that not all did so can be considered a positive feature of the initiative where successful completion was not an automatic outcome. The level of education appears to have been well suited to the dental care professionals' expectations. Professional development opportunities for dental care professionals are limited and this initiative was seen as particularly important for those interested in providing care on direct access to patients. The focus of this initiative was non-surgical periodontal care and this needed to be explicit from the outset as some dentists would have valued developing skills in periodontal surgery.

Third, while participating clinicians emerged with additional knowledge and skills in clinical periodontology, together with enhanced appreciation of inter-professional working which contributed to their professional status and development, all participants had hoped to gain a further qualification. The lack of legitimisation of their status and expertise through the educational system was a source of great concern; this represents an important issue for health professionals in general and especially in cases such as training where they are the leaders in a new initiative. Ironically, there was more potential for clinicians working in the private sector to use their enhanced skills in a formal manner than in the NHS. This may be a consideration for the NHS in future as part of workforce developments.<sup>5,57</sup>

Fourth, the programme set out to contribute additional service capacity and capability to the NHS system of care; however, the NHS was going through a period of transition and therefore the potential to increase the capacity of periodontal care has not yet been utilised.

This was one of the perceived failures of the scheme and reflects the concerns of London dentists trained in a similar initiative to gain extended skills in endodontics.<sup>35</sup> Formalisation of this expertise ideally needs to be addressed at the earliest possible opportunity in line with aspirations. It is clear that the training of dentists and dental hygienists/therapists, with some adaptation for prior learning (or lack of it) has much to contribute to all participants and should be continued in future initiatives. Given the level of periodontal need among adults,<sup>58</sup> and our ageing population, consideration should be given to 'extended skills training' nationally, using both dental care professionals and dentists which is in line with emerging guidance on using enhanced skills.<sup>5</sup>

The strength of this research relates to the range of data from the mixed methods approach and the willingness of participants to share both the negative and positive aspects of this pilot scheme. The findings provide clear learning for future action and lend support to the development of future training, and tools with which to conduct its evaluation. One of the limitations was that some course participants did not contribute to the evaluation. The learning from this project suggests that when future educational and service initiatives are being planned, one requirement should be an expectation of participation in the evaluation for all dental professionals and their patients. New initiatives should have built-in evaluation of clinician and patient views from the outset, with clinical outcomes assessed blind for a sample of patients in order to minimise bias.

In summary, there was general support for enhanced skills training involving the dental team to contribute to patient health and the healthcare system. There is evidence that the care provided by these clinicians improved patients' periodontal health and they were very satisfied with the care received. The findings suggest that this two-year course has contributed to the professional development of clinicians, together with a fresh appreciation of inter-professional working. This initiative demonstrates the potential for inter-professional education with clear learning for future programmes and provides instruments for a robust evaluation involving a trial. It should provide clinicians with the confidence to contribute data to enable its evaluation when funded through public resources. Overall the findings suggest that clinicians with additional and/or enhanced skills have a role to play in developing and delivering future NHS

services;<sup>60</sup> however, this should be supported by the opportunity to gain qualifications,<sup>59</sup> and compete for a service contract. Any future initiatives need to be firmly embedded in educational, professional and health service systems as initiatives for 'enhanced skills training', with a clear educational outcome, approved professional status and the opportunity to use these skills within the health service.

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#### Declaration of interests

*SG and ER have no conflict of interest in the scheme. EJ commissioned the project. JEG is and VH was based within the academic health science centre where the training was conducted; however, they did not have any involvement with the educational programme. JEG is the chair of the Dental Workforce Advisory Group for England; the views expressed are her own and do not represent the views of Health Education England nationally or Public Health England. EJ is postgraduate Dental Dean for London and responsible for the vision for this initiative.*

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