Post-qualification dental training. Part 2: is there value of training within different clinical settings?

Alexandra J. Coleman*[1] and Gabrielle M. Finn[2]

Key points

Identifies how post-qualification dental training pathways prepare trainees for independent clinical practice and their future careers.

Highlights that training within different clinical settings appears to provide opportunities for skill development, career development and appreciation of patient care pathways.

Identifies that training within the wider healthcare team appears to play a major role with regards to trainee development and interprofessional collaboration.

Abstract

Introduction Upon completion of dental foundation training (DFT), a number of dental graduates apply for further training known as dental core training (DCT). Alternatively, there are two-year integrated training pathways within both primary and secondary care; known as longitudinal dental foundation training (LDFT). There is a lack of evidence supporting LDFT and how this compares to DFT and DCT.

Aim To explore perceptions and experiences of three post-qualification dental training pathways (DFT, DFT+DCT1, LDFT) and understand how this training prepares trainees for independent clinical practice and their future career.

Method A qualitative study from an interpretivist stance, theoretical sampling was carried out until data saturation was achieved; 36 individual in-depth semi-structured interviews of trainees and supervisors were conducted. The development of codes and generation of sub-themes resulted in major themes grounded within the data of participants.

Results Seven major themes were generated: training pathway choice, skill development, career development, identity, team, setting and training programme.

Conclusion The second part of this short series provides an understanding of how the different training pathways prepare trainees for independent clinical practice and their future careers; in particular how training in different clinical settings can promote interprofessional collaboration and appreciation of patient care pathways.

Introduction

Health Education England (HEE) invest a significant amount of money into post-qualification dental training each year in order to develop safe and competent dental practitioners. Health Education England across Yorkshire and Humber (HEEYH) currently provides opportunity for the recently qualified dental graduate to complete one of three training pathways; dental foundation training (DFT), DFT followed by dental core training (DCT) or a two-year integrated longitudinal dental foundation training programme (LDFT). Part 1 of this two-part series has explained each of these training pathways in detail and its current evidence base. There is very limited evidence comparing the three different post-qualification dental training pathways; DFT, LDFT and DFT + DCT1 and which training pathway may best prepare trainees for independent clinical practice and future career prospects.

[1]Speciality Registrar (StR) in Restorative Dentistry, Leeds Dental Institute; [2]Director of the Health Professions Education Unit & Professor of Medical Education, Hull York Medical School
*Correspondence to: Alexandra J. Coleman
Email: alexandra.coleman@nhs.net

Refereed Paper.
Accepted 17 June 2019
https://doi.org/10.1038/s41415-019-0949-4

Study design

This was a qualitative study with the aim to explore perceptions and experiences of the three post-qualification dental training pathways provided by HEEYH (DFT, DFT + DCT1 and LDFT). The aim was to understand how this training prepares trainees for independent clinical practice and their future career. A total of 36 individual semi-structured interviews of both trainees and supervisors of the three different training pathways were conducted. Details of the study methodology can be found in Part 1 of the paper.

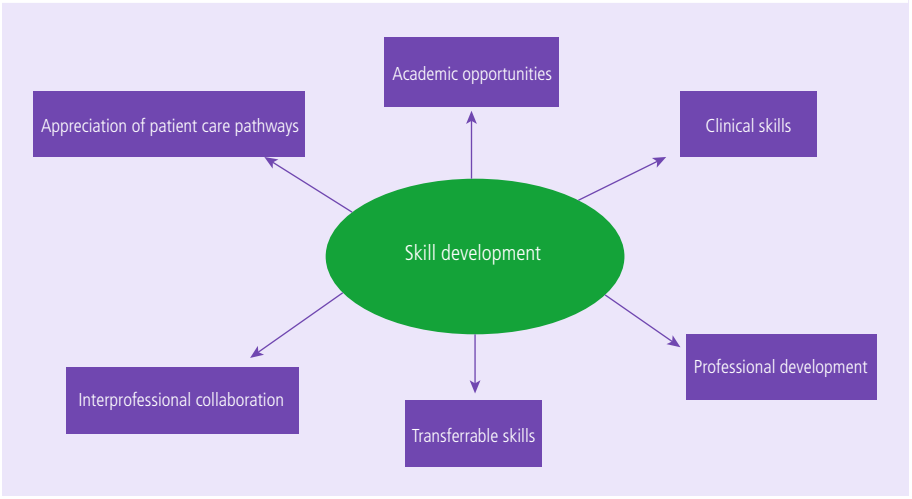
Results

Through iterative data analysis, the development of codes and generation of sub-themes resulted in seven major themes grounded within the data of participants. These seven major themes included: training pathway choice, skill development, career development, identity, team, setting and training programme. It was not possible to discuss each major theme in detail within this publication. Upon agreement by the research team, five themes were chosen for discussion due to their recurring prevalence within the data and relevance to the research question. The theme 'training pathway choice' was discussed in part 1 of this paper. In order to understand how well the different training pathways prepare trainees for independent clinical practice and their future careers, part 2 of this paper will discuss the following themes: skill development, career development, identity and team.

Major theme: skill development

Figure 1 provides a diagrammatic representation of the sub-themes of the major theme: skill development.

Fig. 1 Diagrammatic representation of the sub-themes of the major theme: skill development



Academic opportunities

The majority of participants referred to academic projects as part of their training, either mandatory aspects within their e-portfolio or additional academic opportunities which helped towards future job applications. Participants often mentioned that there was more opportunity for academic projects in secondary care compared with primary care. A two-year programme (LDFT) also appeared to provide more time to complete academic projects.

'*…you're given more opportunities than in (DFT), particularly in the hospital, there's a lot more audits and things that can be done…if you've only got one year it's very difficult to firstly find a topic…doing your audit, bringing about the change and re-auditing, it's a lot to manage in a year…which is difficult if you're new to a place…how to improve a service that you're not sure how it works…I'd say having the two years helps, definitely.*' LDFT trainee.

However, some trainees mentioned that a role involving academic projects and assignments was less appealing.

'*I hate…doing all the assignments, I just can't stand that whereas I just like cracking on and doing the job.*' DFT trainee, now GDP.

Clinical skills

DFT trainees focused on development of general dental skills. Supervisor skillset and demographics of patient base appeared to influence skill development that could result in missed clinical opportunities.

'*…the practice I worked is in an area that's quite high need so… I've done absolutely loads of extractions, loads of dentures, lots of gross caries… On the…other side of that I haven't really done that many crowns or that many bridges…*' DFT trainee, now GDP.

'*…didn't do that much minor oral surgery… because my trainer didn't do that much, I think that sort of had an influence on me…a lot of people said that it depends on their trainer as to what they kind of found themselves doing more of.*' DFT trainee, now GDP.

In contrast, DCT trainees in OMFS often focused on what was relevant to general dental practice and what wasn't. They also reflected on where their training was based and how this influenced their skill development.

'*I feel so much more confident in terms of soft tissue surgery and especially extractions… I quite often do surgicals… I wouldn't be afraid of doing it in practice now, so that's great…*' DCT trainee

'*...district generals where they have less staff, then the DCTs get to do a lot more whereas here [teaching hospital] we actually have to spend a lot of time assisting in theatres with the big cases…it's not as relevant as doing extraction of teeth…you're just kind of just holding instruments…which can get quite boring…*' DCT trainee

Some DCTs expressed concern that they may deskill in areas of general dentistry while spending a full year in OMFS.

'*...the end of (DFT), I definitely got up, my, my skillset with…fillings, caries removal, root treatments… but then you can argue that now I've gone into [DCT] and now all we do is the surgical side of things, I've then left that skillset…for a full year and not picked up a drill…*' DCT trainee.

LDFT trainees mentioned additional skills they may not have developed in primary care (DFT) alone.

'*I did a comprehensive care list with the specialist… under general anaesthetic …that was invaluable… one to one really in-depth experience in teaching…I do some clinics in paediatrics as well… restorative techniques using rubber dam and how to behaviour manage patients, stainless steel crowns I would never have got that experience in practice…*' LDFT trainee.

Transferrable skills

Skills developed in secondary care that can be transferred to primary care were identified. In OMFS DCT posts, this often related to the management of acute swellings, trauma, soft tissue lesions and development of medical knowledge.

'*…if we see a suspicious lesion in a patient's mouth, we've had a lot of exposure to that this year…different types of ulcers…oral lesions and gained a better understanding of what they are and how they're managed…*' DCT trainee.

LDFT trainees described directly transferring the skills they had developed between primary and secondary care from one week to the next.

'*…you…see or do something in secondary care and then bring it into primary care…I've sort of got quite good at surgicals and stuff because I work in hospital and now that I'm in practice if, if I can't get a tooth out, I'll just do a surgical, it's not an issue…there's kids I'll treat in practice now that I would have probably referred if I'd never done community…*' LDFT trainee.

Interprofessional collaboration

Trainees reflected upon the benefits of working within a large team in secondary care; in particular working with different teams involved in patients' care.

'*…you're liaising with so many different people, different medical teams, different hospitals, we're getting all these different referrals coming in and it just improves your confidence massively with just knowing how to manage patients… liaising with the wider medical team… it's a good part of the job really.*' DCT trainee.

A supervisor also described the benefits of this interprofessional collaboration for both the trainee and the team.

'*...in practice you spend all day in a room with your nurse…it's a, more a one on one relationship, in maxfax it's a team effort…*

Fig. 2 Diagrammatic representation of the sub-themes of the major theme: career development

how you talk to different people, how you refer them inter-department or how you take them through A&E into the maxfax department… it's [LDFT] been insightful because we've learnt things in practice or found out things about referrals… because actually there's somebody on the inside.' Supervisor based in primary care.

Appreciation of patient care pathways

By working in secondary care settings, DCT and LDFT trainees explained how this helped to develop their understanding of the referral system and patient care pathways.

'*I think it's just beneficial knowing what happens in secondary care, so for example if you were to refer a patient what information you need and why and what's going to happen…you can explain to patients the patient journey… better…*.' LDFT trainee.

In comparison to this, a DFT trainee now working independently as a GDP, explains why they would like some hospital experience in order to improve their understanding of secondary care and referral pathways.

'*Just so I could see how everything works in the hospital … to know when I'm referring my patients… to know what they go through…so I can tell them…*' DFT trainee, now GDP

A supervisor reflected upon the importance of working within different settings to appreciate shared patient care.

'*…if we want to in the future…have some sort of shared care… get us working together as a team in the best interest of the patient… if you start with the new graduates who are going out with that knowledge of both systems and working in both systems, I think it can only be beneficial for their career and the profession later on*' Supervisor based in secondary care.

Major theme: career development

Figure 2 provides a diagrammatic representation of the sub-themes of the major theme: career development.

Informing career decisions

Many LDFT trainees explained that by experiencing a breadth of specialties they were able to gain an insight into different specialities which informed career decisions.

'*…the paediatric and community side of the secondary care placement was what I enjoyed most and the fact that I had that experience allowed me to figure that out, maybe quicker than I would have done otherwise*.' LDFT trainee.

In contrast to this, a DFT trainee describes how they would have liked to organise time within a community setting.

'*I wanted to try…and shadow in community …I wanted to see what it was like as a, as a career and then also get an idea of the skills involved…*' DFT trainee, now GDP.

Preparation for next stage in career

DFT trainees focused mainly on the development of clinical skills during DFT in preparation for independent general dental practice. The majority felt that DFT had prepared them well; however, once working independently, some described challenges particularly when treating a different demographic of patients and commented on the benefit of having supportive dentists within their new practice.

'*…it was a bit of a shock going into general practice… partly it was just the area that I was working in… a particularly high need area…. One day I had to see twelve emergencies in one day, when I was the only dentist in the practice…I didn't feel prepared for that. …, fortunately one of the dentists was very good at teaching me and showing me things……. a lot of my patients couldn't speak English so on a daily basis I was having to deal with interpreters…I had never dealt with an interpreter in my foundation year. … extractions…suddenly I was on my own …I felt at times a bit… panicky…stressed and anxious…*' DFT trainee now in GDP.

In contrast, DCT and LDFT trainees focused more on the non-clinical skills that they had developed which helped their application for future jobs.

'*…the opportunities available, not only in clinical skills but in, I suppose academia as well, teaching experience and enhancing your CV…I think this year we've had more opportunities for presentations and posters and things… the portfolio station was one of my strongest points in the interview*.' DCT trainee.

Career goals

A number of trainees identified that HEE training pathways were not the only option for further development, that there were other opportunities (such as private courses) while working in general dental practice.

'*I think I would like to do further courses on endo…composite or, I've done a course already on…anterior alignment orthodontics…*' DFT trainee, now GDP.

Many DCT and LDFT trainees explained they sought post-qualification training within secondary care as their goal was to specialise in the future. For some, their experience confirmed their goal to specialise.

'*So I'm hoping to do ortho in future, and that's where the DCT training becomes relevant…for ortho we need quite a broad range of experience in different settings…in different specialties so… maxfax, I've seen orthognathic procedures… ortho treatment planning clinics…next year hopefully community, I will get a little bit more experience with paediatric patients, special needs patients… if anything it's made me more motivated to do it …*' DCT trainee.

For others their experience of training changed their career goals.

'*I wanted to do ortho initially I was like oh they always look for paeds and maxfax*

experience when you apply for ortho training, so I went, ended up doing this job [LDFT] and then I realised… I don't want to commit myself to do ortho and how competitive it is, being in a hospital environment and with there being national recruitment as well, so I might just do an MSc…and just be a GDP with some special interest rather than go through the whole training pathway …' LDFT trainee.

Major theme: identity

Figure 3 provides a diagrammatic representation of the sub-themes of the major theme; Identity.

Generally, DFT trainees did not identify any significant issues with their professional role or identity. However, working within OMFS, DCT trainees did find undertaking the perceived role of a junior doctor challenging.

'…you are in a sort of high-pressure medical environment…you're at the same level as a junior doctor however you've not done a medical degree…I found it pretty stressful and…the first few months I definitely thought about handing my notice in….' DCT trainee.

LDFT trainees also described initial challenges in understanding their role within different settings in particular within an OMFS team.

'When you first start…you're adapting to working life…you're trained to be a general dentist and you go into GDP and you do a nine to five, that's fine, you can handle that, when it comes to the maxfax week you're not trained to do that…you don't know what you're doing… you're absolutely exhausted because the hours are longer in maxfax and then every week you then change job again and then in that week…you tend to forget everything you've just learnt….' LDFT trainee.

It was acknowledged by supervisors that DCT or LDFT trainees within secondary care settings may be seen by the team as junior doctors.

'I think you're looked at on a par… with medical students or SHOs from a medical background, so they (medical team) don't differentiate the fact that it's dental training…just assume to be able to do the same thing at the same level.' Supervisor based in primary care.

However, in established training units, trainees identified that the majority of their direct team were aware of their dental training background.

'I think everybody's aware initially that you are from a dental background…they're so willing to offer…advice…I think it's purely because they've seen it for many years now, and know what to expect.' DCT trainee.

As only based within secondary care on alternate weeks, some LDFT trainees did describe challenges in how they were perceived by the team. On a positive note, this LDFT trainee goes on to describe their integration within the team over the two-year period

'…they see you as a part-timer who's just graduated from dental school…at that time obviously none of you know what you're doing…I don't think you're seen as a full team member, you're seen as more of a spare part, whereas in the second year because you're already trained, you've already been doing it for a year, when the new DCT starts you start helping them, so then it kind of changes a little bit, you're seen as a bit more of a senior, so you're given a little bit more respect… they'll delegate you things.' LDFT trainee.

Fig. 3 A diagrammatic representation of the sub-themes of the major theme: identity

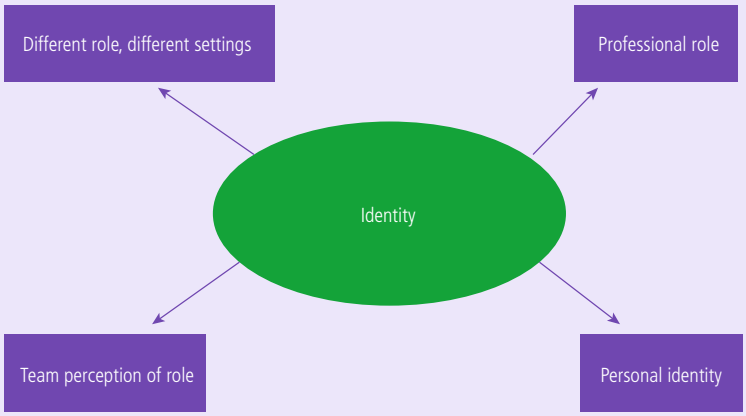
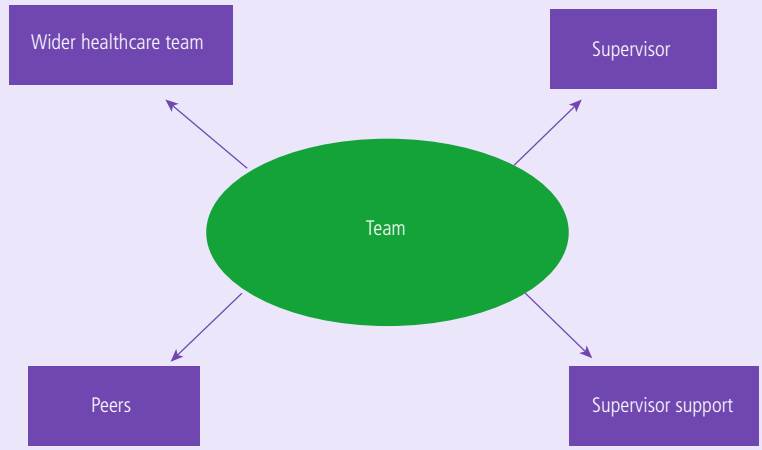


Fig. 4 Diagrammatic representation of the sub-themes of the major theme: team



Major theme: team

Figure 4 provides a diagrammatic representation of the sub-themes of the major theme: team.

Supervisor

DFT trainees tended to focus on the clinical training they received from their supervisor. A limitation that was identified in DFT was that the skillset of one supervisor could influence training experience.

'…it's one of the weaknesses of doing one year with one person is that their weaknesses become your weaknesses, their strengths become your strengths…' Supervisor based in primary care.

Trainees and supervisors identified that having more than one supervisor during DFT training may be beneficial.

'I had two trainers in my practice…I got the best of both worlds…both…were general dentists, one was doing a Masters in…endodontics,

my other trainer…very comfortable doing surgical extractions, so I got a really good mix…I think the skillset of my trainers has really heavily influenced me…' DFT trainee, now GDP.

Supervisors discussed the benefits of shared training in LDFT in terms of delivering certain aspects of training within a secondary care setting.

'*…from my point of view I'd kind of go oh it'd be great if they had more oral surgery contact with specialists because I do not have those skills.*' Supervisor based in primary care

'*I was working with a group that's spending time in oral surgery…they became quite competent in oral surgery quite quickly, that was an advantage across the board for themselves, for patients and for myself…the training load for me was probably not as great because those FDs were getting experience in training in oral surgery, you know, at their secondary care attachments.*' Supervisor based in primary care.

Peers

DCT trainees often commented on peer support.

'*We're [LDFTs and DCTs] always bouncing ideas off each other….and because we had weekly teaching and it was really nice to get together…it helped us gel as a team as well, which is important because it is long hours and it, at times it's stressful so it's good to have a supportive team…who will…work hard and back you up.*' DCT trainee.

Wider healthcare team

Many trainees in secondary care settings talked about learning from the wider healthcare team.

'*…what I was actually…really impressed with was how willing other teams and staff members…are to come and, you know, offer a hand or give advice.*' DCT trainee.

'*…you're working within a larger team so… you get more of an appreciation of kind of the different teams involved … you get a lot more help here, you get a lot more kind of insight into the different specialties and different kind of medical units in the hospital*' DCT trainee.

Comments were made by supervisors about how the trainees directly contribute to the learning and development of the team within primary dental care.

'*…[LDFT trainees are] more up to date with things like…guidelines for BRONJ, the new kind of anticoag drugs that have come out, they seem to be more in the know about that because the hospitals give them policies and procedures to follow, which then they seem to bring into primary care.*' Supervisor based in primary care.

Discussion

How does this study fit with current literature?

DFT is a well-established training pathway, with a reasonable evidence base.[1,2,3,4,5,6,7] In 2014 despite over 90% of trainees feeling that their experience of DFT was either excellent or good, 40% felt there were gaps in their clinical experience.[2] Within our research, many trainees viewed DFT as an important transition period between dental school and practice; being immersed within a primary care setting to develop skills and prepare for working independently within general dental practice. However, 'missed clinical opportunities' was identified and often these gaps in clinical skill development were associated with the limitation of having one specific patient base or one supervisor skillset within their DFT placement. Ali *et al.*[8] also identified this as an issue and a DFT pilot model for 12 trainees within two primary dental care settings with two different supervisors was introduced. Evaluation of this pilot[8] identified similar findings to our study; with training in different settings positive aspects include multiple trainers for feedback and experience of working in different socio-economic areas but the disadvantage of taking longer to feel settled and part of the team.

Within the most recent national survey of OMFS SHOs in 2012,[9] the best aspects of this training role are similar to the findings within our research; improving clinical skills in dentoalveolar surgery, increased confidence to manage patients with a medical condition and experience of working in a multidisciplinary team.[9] However, not mentioned in this national survey[9] but a key area discussed among participants within our research, were the academic opportunities available during DCT training. This may be a reflection of DCT now being more of a structured training programme with supervisor support and a dedicated curriculum. Some of these academic opportunities have been highlighted in a more recent regional study of OMFS DCTs.[10] However, current evidence underlying DCT is based purely on perspectives of those who have completed DCT training. There appears to be a lack of evidence investigating the reasons why trainees chose not to pursue DCT. We identified that trainees who did not choose a DCT training pathway did so due to a number of reasons; OMFS perceived as a daunting environment, hospital hierarchy, being dentally qualified in a medical setting, lack of variety/specialties, deskilling and lack of hands-on training relevant to clinical dentistry.

In 1996, it was identified that a two-year integrated training programme resulted in a greater appreciation of primary and secondary care, more advanced clinical skills, greater adaptability and helped to inform career decisions.[11] Our research reflected similar findings with regards to LDFT in terms of clinical skill development, professional development, career development and appreciation of the patient care pathway. The fact that LDFT trainees spend alternate weeks between primary and secondary care may be why transferrable skills and interprofessional collaboration were more explicit and identified within this study. Lack of continuity of patient care was an issue identified in the pilot study;[11] however, this has not been identified as a recurring theme within our study. This may be associated with current LDFT trainees spending a two-year period in the same setting, albeit alternate weeks, , rather than block rotations.

There is a lack of evidence regarding post-qualification dental training within multiple settings in the UK and internationally. However, we can compare our findings with evidence of medical training pathways. UK medical graduates complete a two-year foundation programme across different specialties and different healthcare settings with a number of supervisors in order to develop their clinical and professional skills.[12] Research of medical students training within different clinical settings found that the quality of supervision and diversity of patient mix influences training experience, self-confidence and self-reported competence of trainees.[13,14] This mirrors what we have identified through our research; patient base, supervisor support and supervisor skill impacts training experience and therefore there is a justification for multiple supervisors in different clinical settings.

Within this study, we identified that by training within a variety of clinical settings and dental specialties, trainees have the opportunity to develop a broad base of transferrable skills which they can use within a primary dental care setting in their future career. The need for more doctors with generalist skills has been advocated and the importance of broad-based training in early post-qualification years

highlighted, particularly in order to address the increasing complex health needs of an aging population.[15,16,17,18,19] Broad-based medical training programmes have been developed to a varying degree across the UK and are popular with trainees who have not made a career choice.[16] In 2013, the Academy of Medical Royal Colleges introduced the two-year post-foundation broad-based training (BBT) programme where trainees undertook six-month rotations in four specialties to develop practitioners adept at managing complex patient presentations and providing patient-focused care with greater integration and understanding across the specialties involved.[17] Bullock *et al.*[17] evaluated the BBT programme and the results identified similar findings to that of trainees completing an LDFT training pathway; understanding how specialities complement each other, ability to apply learning across specialties, trainee adding skills to the team and greater awareness of holistic patient care and the patient journey.[17] Identity and integration within the team was an issue for some LDFT trainees and it was identified that some BBT trainees felt like 'an outsider' and 'struggled to fit in'.[17] Despite positive reviews, recruitment for broad-based medical training programmes has since ceased in England and Wales.[17,20] Similarly, despite the introduction of LDFT programmes in 1996, LDFT is now only available in two regions of the UK. Bullock *et al.*[17] suggest that this generalist approach to training was perhaps ahead of its time.

'Team' – does this have a major influence on post-qualification dental training?

During constant comparative data analysis, it became apparent that there was a recurrent prevalence of 'team' grounded within the data of participants and that 'team' is associated with the other major themes.

DCT and LDFT trainees discussed the benefits of working and learning with fellow trainees. Social cognitive theory acknowledges that we learn from and in interaction with others.[21] Participants identified the advantages of peer support during non-clinical time; during teaching sessions and outside of work. Shared experiences and learning among peers could be perceived as an aspect of the hidden curriculum; learning which falls outside the formal curriculum.[22] This valuable learning process should be made explicit through encouragement by the supervisor to promote peer collaboration and discussion outside of clinical time. However, we did identify that when multiple trainees work in the same setting, that opportunities for training can be diminished. It is essential that the supervisor is aware of this challenge and organises timetables accordingly to ensure equal clinical experience is gained by all trainees where possible.

Participants identified the advantages of working within a wider healthcare team in terms of learning and collaborative work regarding patient care. Situated learning theory views learning and development through participation in community activities; learners transform their understanding, roles and responsibilities.[21] Initially, some LDFT trainees described feeling as a 'spare part' and not integrated well within the team but further into training feeling more respected within that team. This learning experience and identity development is highlighted within Lave and Wenger's communities of practice learning theory;[23] a new learner entering the community of practice at the edge but as they take on more responsibility, learners move to the centre with increasing participation and understanding of their role and the community of practice. Identity and integration within the team was less of an issue among teams and departments where DCT and LDFT is a more established training pathway. However, the integration into a community of practice can be compromised in training units which are new to a training pathway particularly with LDFT trainees spending part time in different settings. Therefore, there should be an emphasis on team awareness and perception of the trainee's role to facilitate integration within the team and for learning to be enhanced.

Through integration and working within the wider healthcare team, the sub-themes of 'interprofessional collaboration' and 'appreciation of patient care pathways' were also grounded within the data of participants. Wenger's communities of practice describe groups of people with a shared concern, interacting regularly and ultimately learning to improve what they do.[23] Participants identified that by working within a wider healthcare team, trainees developed skills in interprofessional collaboration. Interprofessional learning is an essential step towards a collaborative health workforce that is competent to work within interprofessional teams and is better prepared to respond to local health needs.[24] Within the LDFT training pathway, trainees get the opportunity for situated learning within a number of communities of practice by training within different healthcare settings and within different teams simultaneously. This increases the opportunities for interprofessional learning, collaboration, appreciation of role within different teams and understanding of the patient care pathway. These skills are essential for all healthcare professionals, particularly with an increasing focus by international and national bodies towards interprofessional collaboration and integrated patient-centred networks of care in order to meet the changing healthcare needs of the population.[24,25,26]

Limitations of this study

A limitation of this study was the broad research question and objectives. Although data saturation was achieved and there was an adequate breadth and depth of data to answer the proposed research question, it was not possible to discuss all seven themes within this paper. With regards to the sample, only trainees and supervisors of HEEYH were included in this study; however, these are broadly the three training pathways available to UK dental graduates provided by HEE and so findings should be generalisable on a national level. Although data saturation was achieved, it is important to acknowledge that the views of previous DFT trainees now in GDP may not be fully represented as this group were harder to recruit.

Recommendations for future research

This research focused purely on post-qualification dental training within HEEYH and while the findings can be generalised to post-qualification dental training nationally, it would be useful to explore views on a UK basis. There is a lack of evidence regarding similar training pathways internationally. While HEE is currently evaluating UK dental training pathways,[27] it would be useful to identify if there are equivalent international training pathways and evaluate these.

Conclusion

This is the first study to evaluate the two-year integrated post-qualification dental training pathway provided by HEEYH (LDFT) and compare this with the traditional training pathways of DFT and DCT. This qualitative project identified seven major themes regarding post-qualification dental training: training pathway choice, skill development, career development, identity, team, setting and training programme.

With HEE currently reviewing the training required to produce a dental workforce for

Box 1 Post-qualification dental training: five key points

1. Training within one setting, with one supervisor and a specific patient base can limit training experience and the development of skills.
2. Training within different clinical settings appears to provide opportunities for skill development, career development, interprofessional collaboration and appreciation of patient care pathways.
3. The development of transferrable skills, interprofessional collaboration and appreciation of patient care pathways appears to be enhanced within the LDFT programme; when training simultaneously across different clinical settings.
4. Training with the wider healthcare team appears to play a major role with regards to professional development, identity and interprofessional collaboration. Team awareness of the trainee's role is essential to facilitate integration within the team and for learning to be enhanced.
5. The need for interprofessional collaboration, integrated patient-centred care and health care professionals with a broad base of experience has been advocated to address the changing healthcare needs of the population.[15,17,18,19,24,25,26] The LDFT pathway may have a role in producing a dental workforce with these attributes.

today and the future,[27] this study aims to inform HEE on what post-qualification training the dental workforce requires. While the benefits of DFT in preparing dental graduates for independent general dental practice have been identified, there are limitations when training within one setting, with one supervisor and a specific patient base. DCT posts are perceived to provide training in areas that trainees may not experience within DFT alone. However, posts within OMFS settings are perceived by some trainees as daunting, particularly being dentally qualified within a medical setting. The need for more training posts within other dental specialties was highlighted by some. An integrated training programme across different clinical settings and dental specialties (LDFT) appears to provide opportunity for development of transferrable skills across both primary and secondary care. However, as LDFT trainees work part time in different settings, it can take longer for them to feel settled and integrated within teams. Therefore, in order for learning to be enhanced and for team integration, it is important that teams are aware of the trainee's role and skillset. Five key take home messages from this study are highlighted in Box 1.

The value of training within different clinical settings to produce dental care professionals capable of interprofessional collaboration and providing patient-centred integrated care has been highlighted in this study. These are essential attributes for a healthcare workforce in order to respond to changes in the healthcare needs of the population and increasing pressures on healthcare resources.[24] An integrated post-qualification dental training pathway within different clinical settings, such as LDFT, may have a role in producing a dental workforce with these attributes.

Declaration of interest
This study was funded by Health Education England.

Acknowledgements
The authors wish to thank all participants who contributed towards this project.

References

1. Ralph J P, Mercer P E, Bailey H. A comparison of the experiences of newly qualified dentists and vocational dental practitioners during their first year of general dental practice. *Br Dent J* 2000; **189:** 101–106.
2. Palmer N O A, Kirton J A, Speechley D. An investigation of the clinical experiences of dentists within the national dental foundation training programme in the North West of England. *Br Dent J* 2016; **221:** 323–328.
3. Clow R, Mehra S. Evaluation of vocational training of dentists in three different regions. *Br Dent J* 2006; 201: 774–778.
4. Cabott L B, Patel H M. Aspects of the dental vocational training experience in the South East of England. *Br Dent J* 2007; **202:** E14.
5. Barlett D W, Coward P Y, Wilson R, Goodsman D, Darby J. Experiences and perceptions of vocational training reported by the 1999 cohort of vocational dental practitioners and their trainers in England and Wales. *Br Dent J* 2001; **191:** 265–270.
6. McKenna G, Burke F, O'Sullivan K. Attitudes of Irish dental graduates to vocational training. *Eur J Dent Educ* 2010; **14:** 118–123.
7. Gilmour J, Stewardson D A. Morale of vocational dental practitioners in the United Kingdom. *Br Dent J* 2008; **204:** E18.
8. Ali K, Khan S, Briggs P, Jones E. An evaluation of a two-site pilot model for dental foundation training. *Br Dent J* 2017; **223:** 287–292.
9. Wildan T, Amin J, Bowe D, Gerber B, Saeed N R. Dental foundation year 2 training in oral and maxillofacial surgery units – the trainees' perspective. *Br J Oral Maxillofac Surg* 2013; **51:** e155–e64.
10. Mannion C J, Brotherton P. Experiences of clinical teaching for dental core trainees working in hospital. *Br Dent J* 2014; **217:** 37–39.
11. Plowman L, Musselbrook K. An evaluation of general professional training for dentistry in Scotland. *Br Dent J* 2014; **188:** 154–159.
12. UK Foundation Programme Office. *UK Foundation Programme.* 2003. Available at http://www.foundationprogramme.nhs.uk/content/about (accessed 19 August 2018).
13. Van der zwet J, Hanssen V G A, Zwietering P J *et al.* Workplace learning in general practice: Supervision, patient mix and independence emerge from the black box once again. *Med Teach* 2010; **32:** e294–299.
14. de Jong J, Visser M Van Dijk. Van der Vleuten C, Wieringa-de Waard M. A systematic review of the relationship between patient mix and learning in work-based clinical settings. A BEME systematic review: BEME Guide No. 24. *Med Teach* 2013; **35:** e1181–1196.
15. Greenaway D. *Shape of training: Securing the future of excellent patient care. Final report of the independent review.* Available online at https://www.shapeoftraining.co.uk/static/documents/content/Shape_of_training_FINAL_Report.pdf_53977887.pdf (accessed 2 September 2018).
16. UK Shape of Training Steering Group (UKSTSG). *Report from the UK Shape of Training Steering Group (UKSTSG).* 2017. Available online at https://www.shapeoftraining.co.uk/static/documents/content/Shape_of_Training_Final_SCT0417353814.pdf (accessed 2 September 2018).
17. Bullock A, Webb K L, Muddiman E, McDonald J, Allery L, Pugsley L. Enhancing the quality and safety of care through training generalist doctors: a longitudinal, mixed-methods study of a UK broad-based training programme. *BMJ Open* 2018; **8:** e021388.
18. Moffat K, Mercer S W. Challenges of managing people with multi morbidity in today's healthcare systems. *BMC Family Practice* 2015; **16:** 129.
19. Tooke J. *Aspiring to excellence: Final report of the independent inquiry into modernising medical careers.* 2008. Available online at http://www.asit.org/assets/documents/MMC_FINAL_REPORT_REVD_4jan.pdf (accessed 2 September 2018).
20. Rimmer A. Scrapped training programme was helping to increase GP numbers, review finds. *BMJ* 2017; **358:** j3260.
21. Kaufmann D M, Mann K V. Teaching and learning in medical education: How theory can inform practice. *In* Swanwick T (ed). *Understanding medical education: evidence, theory & practice.* 2nd ed. West Sussex, UK: John Wiley & Sons Ltd, 2014.
22. Lempp H, Seale C. The hidden curriculum in undergraduate medical education: qualitative study of medical students' perceptions of teaching. *BMJ* 2004; **329:** 770–773.
23. Wenger E. *Communities of practice: learning, meaning and identity.* Cambridge, UK: Cambridge University Press. 1998.
24. World Health Organisation; Health Professions Network Nursing and Midwifery Office within the Department of Human Resources for Health. *Framework for Action on Interprofessional Education & Collaborative Practice.* 2010. Available online at http://apps.who.int/iris/bitstream/handle/10665/70185/WHO_HRH_HPN_10.3_eng.pdf; jsessionid=1BC4613830D77C53E3D3ACFCE-16B4201?sequence=1 (accessed 28 August 2018).
25. National Health Service, United Kingdom. *Next steps on the NHS Five Year Forward View.* 2017. Available online at https://www.england.nhs.uk/wp-content/uploads/2017/03/NEXT-STEPS-ON-THE-NHS-FIVE-YEAR-FORWARD-VIEW.pdf (accessed 28 August 2018).
26. National Health Service, United Kingdom. *NHS Five Year Forward View.* 2014. Available online at https://www.england.nhs.uk/wp-content/uploads/2014/10/5yfv-web.pdf (accessed 28 August 2018).
27. National Health Service Health Education England. *Advancing dental care: Education and training review. Final report.* May 2018. Available online at https://www.hee.nhs.uk/sites/default/files/documents/advancing_dental_care_final.pdf (accessed 18 August 2018).