

The perceptions of undertaking a higher degree alongside orthodontic speciality training: a cross-sectional survey of British Orthodontic Society members

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Key points

Reports the findings of a cross-sectional, questionnaire-based survey on UK orthodontists' perceptions of undertaking a higher degree alongside orthodontic speciality training.

Highlights the value specialist orthodontists place on undertaking a higher degree as part of their speciality training.

The results of this survey will help to inform stakeholders involved in the planning of postgraduate orthodontic education on specialist orthodontists' opinions on undertaking a higher degree alongside speciality training.

Abstract

Introduction In the UK, orthodontic speciality training takes place over three years full-time. In addition to the clinical training, there is an expectation that trainees undertake a higher degree. Currently, there is little evidence regarding the impact of undertaking a higher degree on specialist orthodontists.

Aims Investigate UK orthodontists' perceptions of undertaking a higher degree alongside speciality training.

Materials and methods A cross-sectional research study involving the distribution of an anonymous, descriptive, online, questionnaire-based survey between May and June 2021 via the British Orthodontic Society. Data were obtained in relation to the impact of undertaking a higher degree on the completion of speciality training, research skills, delivery of patient care and career opportunities.

Results In total, 166 questionnaires were completed (approximately 13.3% response rate). Most respondents 'agreed' or 'strongly agreed' that undertaking a higher degree had improved their scientific (77.1%) and critical appraisal skills (80.7%), job prospects (60.2%) and career opportunities (63.9%). Most respondents felt the benefits of the higher degree outweighed the associated costs (65.1%) and was a worthwhile component of training (69.3%).

Conclusions Specialist orthodontists place a high value on undertaking a higher degree. The results of this questionnaire should be of importance to stakeholders involved in the development of the orthodontic curriculum.

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Introduction

In the UK, approximately 10% of dentists will undertake postgraduate training to pursue a career as a specialist in one of the 13 dental specialities recognised by the General Dental Council (GDC).¹ For UK dentists, entry onto a GDC specialist list usually occurs following the award of a specialist membership diploma with one of the surgical Royal Colleges, completion of a GDC-approved speciality training programme and the award of a Certificate of Completion of Specialist Training (CCST).²

Gaining a speciality training post is highly competitive, with several essential requirements for candidates to attain

before application.³ In the UK, recruitment to speciality training occurs through a competitive national recruitment process, with posts advertised through Oriel, the portal for postgraduate-speciality medical, dental and public health training.⁴ In the speciality of orthodontics, approximately 35 training posts are advertised annually.⁵

Following successful recruitment at an orthodontic national recruitment interview, applicants are appointed as orthodontic speciality trainees (STs), are allocated a national training number and receive a salary fully funded by the National Health Service (NHS) through Health Education England (HEE) or the equivalent devolved bodies in Wales, Scotland and Northern Ireland.⁶ In the

first instance, orthodontic speciality training takes three years (ST1–3) full-time or part-time equivalent and is based in secondary care, usually in teaching and district general hospitals.⁷ The orthodontic speciality training programme comprises both clinical, academic and research components, with the latter usually being fulfilled by undertaking a postgraduate degree at masters (MSc, MCLinDent, MPhil) or doctorate level (DDS, DCLinDent). Therefore, as well as being NHS employees, orthodontic STs (ST1–3) also register as students at a university linked to their training programme, which incurs the payment of tuition fees by the individual to that university.^{8,9} Tuition fees vary between different university institutions, with average fees being charged at £11,095 per year (£2,325–£23,000). Alternatively, STs may choose not to undertake a higher degree but instead submit two papers to appropriately peer-reviewed journals on academic work completed during speciality training. The requirement for STs to gain personal research training and experience is outlined as one of the objectives in the orthodontic curriculum. The current curriculum, last published in 2010, was produced by the Speciality Advisory Committee (SAC) in orthodontics, which is an intercollegiate body that specifies the essential skills, knowledge, attitudes and requirements to become a specialist in orthodontics.⁹ However, the GDC have ultimate responsibility in approving, regulating and quality-assuring the individual speciality curricula.¹⁰ The expectation to undertake a higher degree alongside dental speciality training currently only applies to the clinical speciality of orthodontics. However, it is a mandatory requirement in dental public health.

After 30 months of full-time or part-time equivalent orthodontic speciality training on an approved programme, ST3s are eligible and expected to sit the Membership in Orthodontics (MOrth) speciality diploma with one of the surgical Royal Colleges. The MOrth examination aims to demonstrate the core knowledge and competencies within the speciality area of orthodontics at the level of a specialist orthodontist.^{8,11,12} Once an ST has gained the MOrth diploma, completed three years of full-time or part-time equivalent speciality training, obtained a higher degree or submitted two research papers and has been issued with a recommendation form from HEE (or the equivalent devolved body), they are awarded a CCST, which enables registration as a specialist with the GDC.²

Following registration, orthodontic specialists may decide to work within primary care as a specialist or undertake further training to become an NHS consultant or clinical academic.

The orthodontic curriculum is currently being reviewed by the GDC to ensure speciality training continues to meet the required standards to protect patients. There is currently no evidence regarding the impact that undertaking a higher degree alongside speciality training has on specialist orthodontists or their orthodontic careers.

The aim of this study was to investigate UK specialist orthodontists' perceptions of undertaking a higher degree as part of their orthodontic speciality training using an online survey of British Orthodontic Society (BOS) members. The results of this survey may be used to inform stakeholders who are responsible for reviewing the orthodontic curriculum about the opinions of the UK orthodontic workforce on undertaking a higher degree during training.

Materials and methods

This was a cross-sectional study involving the distribution of an anonymous, descriptive, online, questionnaire-based survey to UK specialist orthodontists via the BOS mailing list. The questionnaire was designed and developed by the authors of this paper. Questions were aimed at collecting data relating to demographics, history of postgraduate orthodontic education and main area of current employment. Further questions were asked to gain an insight into the perceptions of undertaking a higher degree alongside orthodontic speciality training and the impact the higher degree has on completion of speciality training, research skills, the delivery of patient care and career opportunities. Ethical approval was granted by the Faculty of Health Science Research Ethics Committee at the University of Bristol (reference number 114664) with secondary approval from the BOS Clinical Governance Committee. The questionnaire was piloted with six specialist orthodontists in the South West of England to help determine validity and assess readability. The initial questionnaire included a combination of positively and negatively worded statements to prevent straight-lining, which is when respondents provide the same response to a series of questions. However, the respondents

in the pilot reported that this led to confusion and difficulty completing the questionnaire. Therefore, the statements were simplified to improve readability and included only positively-worded statements. Responses to statements were provided with a five-point Likert scale, which ranged from strongly disagree to strongly agree. A copy of the questionnaire-based survey is available for reference via the following link: https://www.ole.bris.ac.uk/bbcswebdav/xid-21062448_1.

The questionnaire was distributed via email by the BOS to 1,247 specialist orthodontist members of the Consultant Orthodontist Group, Orthodontic Specialists Group, University Teachers Group, Community Group and specialists in the Training Grades Group. The email invitation contained a brief description of the study and a participant information sheet, which provided further information and a link to the online questionnaire. The email link was active for eight weeks between 4 May to 30 June 2021. Having followed the online link, respondents were required to read a consenting statement and confirm this had been read before continuing with the questionnaire. Consent was implied by respondents completing the questionnaire. A reminder email was sent out three weeks after the initial invitation email. The questionnaire was created and data collected using Online Surveys.¹³ Data were collated using Microsoft Excel and descriptive statistics were calculated to describe the data. Responses to free-text comments were independently read and coded by two authors of this paper (JJ and JAH) and were then reviewed by a third author (AJI).

Results

A total of 166 respondents completed the online, questionnaire-based survey, which represents approximately a 13.3% response rate. Most of the questionnaires were completed by women ($n = 95$, 57.2%), with a smaller proportion being completed by men ($n = 70$, 42.2%). Demographic characteristics of the sample are provided in Table 1.

Most respondents had obtained their orthodontic speciality training qualification in the UK ($n = 164$, 98.8%) and of those, 42.8% ($n = 71$) within the last 10 years ($n = 71$, 42.8%). Within the sample, the higher degree qualification most frequently obtained during orthodontic speciality training by respondents was a master's degree ($n = 132$,

Table 1 Demographic characteristics of the sample (n = 166)

Demographic	Number	Percentage
Sex		
Female	95	57.2
Male	70	42.2
Undisclosed	1	0.6
Age (years)		
<30	1	0.6
30–39	61	36.7
40–49	41	24.7
50–59	44	26.5
>60	18	10.8
Undisclosed	1	0.6

Table 2 Sample data relating to history of postgraduate orthodontic education and area of main employment (n = 166)

Education/employment	Number	Percentage
Location of orthodontic specialty training (ST1–3)		
UK	164	98.8
Republic of Ireland	0	0
European Economic Area	1	0.6
Other	1	0.6
Decade of gaining primary orthodontic qualification		
1980–1990	12	7.2
1991–2000	42	25.3
2001–2010	38	22.9
2011–2020	71	42.8
Undisclosed	3	1.8
Level of highest qualification gained during specialty training (ST1–3)		
Certificate	3	1.8
Diploma	0	0
Masters (MSc, MCLinDent, MPhil)	132	79.5
Taught doctorate degree (DDS, DCLinDent)	27	16.3
Research doctoral degree (PhD)	4	2.4
Location of main employment		
Specialist in primary care	51	30.7
Training grade specialist in secondary care	22	13.3
Training grade specialist with academic appointment	1	0.6
Non-consultant grade specialist in secondary care	3	1.8
NHS consultant	79	47.6
Academic appointment	8	4.8
Other	2	1.2

79.5%), with smaller proportions completing taught doctoral degrees (n = 27, 16.3%), research doctoral degrees (n = 4, 2.4%) and certificates (n = 3, 1.8%). When questioned about the main area of employment, the highest proportion of respondents were NHS consultants (n = 7, 47.6%), followed by specialists in primary care (n = 51, 30.7%). See Table 2 for data relating to history of postgraduate orthodontic education and main area of employment.

Completion of orthodontic speciality training

Just over 90% (n = 150, 90.4%) of respondents knew there was a requirement to undertake a higher degree as part of orthodontic speciality training before applying for speciality training (Fig. 1). The majority of respondents 'agreed' or 'strongly agreed' that undertaking a higher degree had helped them prepare for sitting the MOrth examination (n = 94, 56.6%) and to meet the learning objectives defined in the orthodontic curriculum (n = 110, 66.3%) (Fig. 1). Within the questionnaire, there was the opportunity for respondents to provide free-text responses. Some respondents reported on the benefits of undertaking a higher degree and the impact on the MOrth examination:

- 'Orthodontics is very different from general dental training and doing a degree also comes with the added benefit of a course of tutorials across the three years, which helps greatly in preparing for the membership exams.'

In addition, respondents reported on the advantages of having a formal academic component provided by the higher degree:

- 'The quality of teaching from many academic units in the UK is most likely exceptional. Thus, training in an NHS environment alone would probably not provide enough academic support for trainees to develop a deep level of understanding of some of the key components of the curriculum.'

Some respondents reported dissatisfaction with paying university tuition fees when some of the teaching on the higher degree programme was delivered by NHS staff:

- 'The cost is too high, considering the educational programme is primarily delivered by NHS consultants [...]'

Other respondents acknowledged the role that NHS staff have in providing teaching on taught

university programmes but the potential issues that could arise if teaching was provided solely by the NHS:

- ‘The organisation and structure of the training is through the university, if we were just part of the NHS we would quickly find teaching time was lost to service [provision] and waiting times would be used as a justification for no time for seminars or research it would become an apprenticeship and it would have no international credibility’
- ‘It is impossible to see how the Training Programme Directors will be able to provide as complete an academic programme without University support. I appreciate that ortho is the only ST programme with a degree attached, but it is also the only speciality where undergraduates graduate with very little prior knowledge, so there is a very steep learning curve.’

Research skills and experience

Over 75% (n = 128, 77.1%) of respondents ‘agreed’ or ‘strongly agreed’ that the higher degree had helped them improve their scientific writing and presentation skills (Fig. 2). With the use of free-text comments, respondents expanded on the impact the higher degree had on the development of research and critical appraisal skills:

- ‘The MSc was the steepest learning curve that I have ever been on. It also made me think for the first time in my career’
- ‘Undertaking a higher degree meant that I learnt all the stages of undertaking a research project, developed my critical appraisal skills and learnt how to write academically about orthodontic matters with support from an expert in the field.’

When respondents were questioned on their preference over submitting two papers to peer-reviewed journals during junior speciality training or undertaking a research degree, 73.5% (n = 122) of respondents stated a preference for undertaking a higher degree. Several respondents commented on the perceived benefits of undertaking a higher degree over the submission of two papers in peer-reviewed journals:

- ‘The two papers route would have been much more difficult, less structured and overall, of less value since I would have missed out on the synergistic learning opportunities offered by the university and NHS.’

Fig. 1 Respondents’ level of agreement of the impact of the higher degree on helping prepare for orthodontic examinations and meeting defined learning objectives

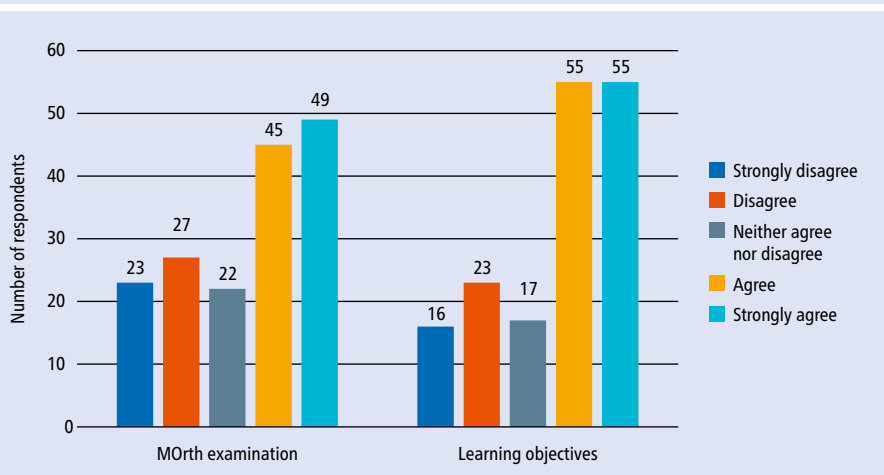
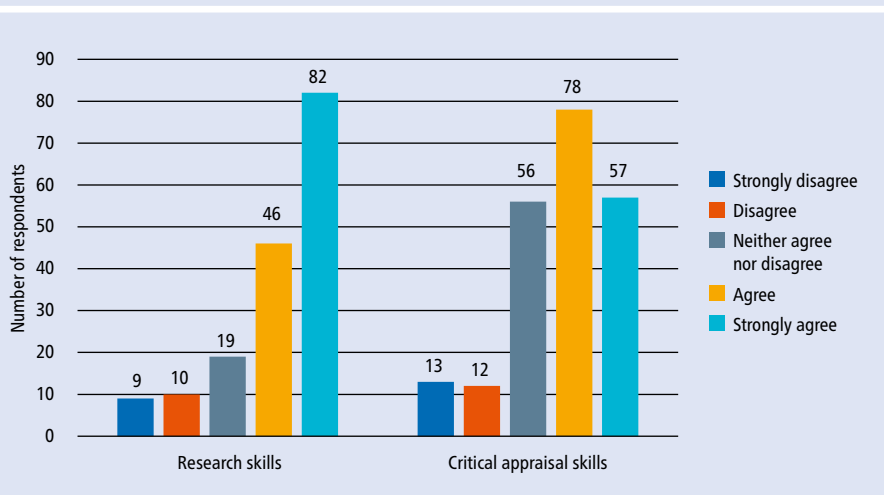


Fig. 2 Respondents’ level of agreement of the impact of the higher degree on gaining critical appraisal and research skills



In contrast, just two respondents reported the perceived benefits of submitting two papers during orthodontic speciality training:

- ‘Publishing two papers would be more relevant to my training and less exhausting.’

Two-thirds (n = 110, 66.3%) of respondents reported publishing the findings of their higher degree research project. However, less than half (n = 53, 48.2%) published their research during speciality training. Some respondents expressed their concerns regarding the feasibility of successfully submitting two papers instead of undertaking a higher degree within the speciality training time frame, particularly if there was limited academic support available:

- ‘Submitting two papers would have been more difficult and time consuming, especially without direct academic support’

- ‘Given the requirements of peer-reviewed journals it might not be possible to get two [papers] submitted in the time frame.’

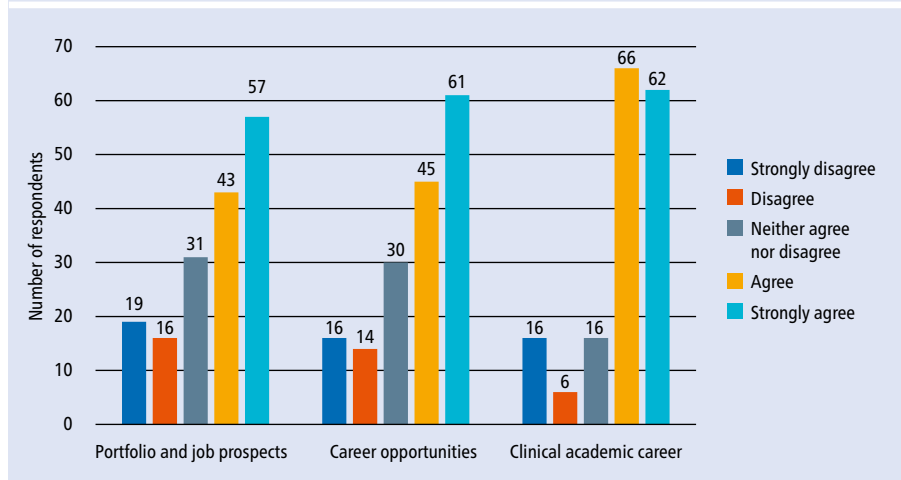
In comparison, some respondents highlighted the challenges they had experienced when trying to complete a research project during speciality training:

- ‘We had to find our own research project and it was very difficult to find one, submit ethics and complete it in time to graduate.’

Delivery of patient care

The majority of respondents (n = 134, 80.7%) ‘agreed’ or ‘strongly agreed’ that the higher degree in orthodontics had helped them to gain skills in critical appraisal and how best to provide evidence-based clinical care to patients (Fig. 2). Several of the respondents commented on the benefits of undertaking a higher degree on the provision of patient care:

Fig. 3 Respondents' level of agreement of the impact of the higher degree on improving their portfolio/job prospects, career opportunities and providing an insight into an academic career



- ‘The masters process is essential in turning out critical thinkers to the benefit of patients and the speciality’
- ‘The training was outstanding and has more than equipped me for clinical life post training.’

However, some of the respondents reported on the negative impacts on undertaking a degree on clinical time:

- ‘Reduced the time I had for clinical learning’
- ‘It [not doing a higher degree] may have left more time to do more clinical work.’

Career intentions and opportunities

When respondents were asked about the impact of the higher degree on career opportunities, the majority of respondents (n = 100, 60.2%) ‘agreed’ or ‘strongly agreed’ the higher degree had helped to improve their portfolio and job prospects. Over 60% (n = 106, 63.9%) of respondents ‘agreed’ or ‘strongly agreed’ that by undertaking a higher degree it had provided them with additional career opportunities, such as teaching, guest lecturing and submitting papers for peer review (Fig. 3). Some of the respondents provided further details on the impact of the higher degree on their career opportunities:

- ‘I am proud of my doctorate on my CV and it has also opened doors for teaching and lecturing opportunities’
- ‘For me a higher degree opened new and rewarding pathways’
- ‘Controlling the running of a scientific investigation helps with the supervising and guidance of your future trainees.’

In contrast, some respondents felt the higher degree had had little impact on their clinical careers as orthodontists:

- ‘Not relevant to my career’
- ‘It is totally inappropriate to have it as a requirement of specialising. Were the same thing to be implemented in medicine there would be strikes in my view.’

One respondent raised the point that when on embarking on an orthodontic career, STs may not be aware of their intended career ambitions and by undertaking the higher degree it equalises candidates and keeps career options open:

- ‘Not everyone knows they just want to be a specialist in primary care or in hospital therefore equal starting points is required.’

Most respondents (n = 128, 77.1%) ‘agreed’ or ‘strongly agreed’ that the higher degree had provided them with an insight into a clinical academic career (Fig. 3). Some of the respondents provided further insight into the benefits of undertaking a higher degree on clinical academia:

- ‘I am proud of doing the MSc despite finding it frustrating at times. I think it a useful insight into academia’
- ‘I found the research degree process interesting and subsequently confirmed that an academic career was not for me.’

Other factors

Almost two-thirds (n = 108, 65.1%) of respondents felt the benefits of the higher degree outweighed the associated costs, financial or otherwise. The most frequently

reported free-text comments provided by respondents were in relation to finances. Some respondents reported on the financial sacrifices of undertaking a higher degree which provided financial remuneration as a specialist orthodontist:

- ‘The costs of doing a masters was insignificant compared with my lifetime earnings’
- ‘The short-term financial impact is overwhelmingly offset over a lifetime career with insight, objective evidence base and appreciation of academic/scientific value in orthodontics.’

Other respondents highlighted inequalities regarding the differing cost of higher degrees across different institutions:

- ‘Expensive degree, no financial support available, varies depending on academic institution so seems fundamentally unfair’
- ‘There should perhaps be a limit on the cost of the degree or more uniform costs across the country or costs of degree covered by trainees trust/health board.’

Some respondents reported the financial implications of undertaking a higher degree on personal circumstances:

- ‘I do not think it should be compulsory as the financial impact and time implications are huge. Especially when it is at a time when many are perhaps trying to buy a house, get married, children etc’
- ‘If there is no option to opt out, the cost of the university degree should be covered as this creates barriers in orthodontics speciality training. My university monthly fees were more than my mortgage. This is very significant when compared to other dental specialities, for example dental public health MSc is required but the cost is waived for the ST.’

Overall, 69.3% (n = 115) of respondents felt that undertaking a higher degree as part of speciality training was worthwhile. Among those that felt the higher degree was worthwhile, the highest proportions were respondents working within secondary care as specialists (n = 3, 100%), NHS consultants (n = 65, 82.3%), in training grade appointments (n = 15, 65.2%) or as academics (n = 5, 62.5%). Whereas smaller proportions of specialists in primary care felt the higher degree was worthwhile (n = 25, 49%). Significant concern was raised by some of the respondents

with respect to the notion of removing the requirement to undertake a higher degree from the orthodontic curriculum (Box 1).

Discussion

In this study, high levels of agreement were reported among respondents with respect to the positive impacts of undertaking a higher degree alongside orthodontic speciality training. Benefits were reported in relation to the impact the higher degree had on preparing for the MOrth examination and meeting the orthodontic curriculum learning objectives. Respondents acknowledged the added benefit of the higher degree and the provision of formal didactic teaching. These findings are comparable to another cross-sectional study investigating the opinions of UK orthodontists on the perceived value of orthodontic training. High levels of satisfaction were reported in relation to orthodontic speciality training and the teaching of theoretical concepts in orthodontics.¹⁴

In this current study, some respondents did express dissatisfaction with paying university tuition fees when much of their teaching was provided by NHS staff. It is perhaps unsurprising that some teaching will inevitably be delivered by NHS staff, considering the overlap in training delivery and current national shortages of academics.¹⁵ Although the contributions of NHS staff in teaching should not go unnoticed, they are ultimately not responsible for organising or delivering academic programmes and may not have gained the skills required to curriculum map and assessment blueprint.¹⁶ Some respondents highlighted potential issues if the NHS were solely responsible for providing teaching, including the loss of teaching to service provision. This is particularly pertinent at present, as the NHS continues to face considerable pressures with increasing numbers of patients waiting to start treatment as a result of the COVID-19 pandemic.¹⁷ With the universities providing the formal academic component of orthodontic speciality training, it not only ensures that didactic teaching is provided under all circumstances, but that STs have protected time within the clinical week to attend teaching.

The majority of respondents reported the positive impact the higher degree had on the development of their scientific, research and critical appraisal skills. These findings are consistent with the study on orthodontists'

Box 1 Sample of free-text comments in relation to the removal of the requirement to undertake a higher degree alongside orthodontic speciality training

- 'If the higher degree is lost, it's setting back UK programmes by 40 years and will revert to an "apprentice training" which would be a tragedy'
- 'The integration of a higher degree into UK speciality training adds a huge amount of value to trainees, even if they don't appreciate it at the time. Any attempt to remove the higher degree from training requirements would devalue the integrity of UK orthodontics and completely undermine the future of academic orthodontics'
- 'It should be essential. The new curriculum should include this as a mandatory aspect of orthodontic training [...] Other dental specialties should follow our lead, not try to destroy what we have developed over a generation'
- 'Orthodontics is only orthodontics because other orthodontists recognise it as specialist care and having a clinical training but no formal academic training, no masters qualification and a clearly second-class approach to education would fool nobody'
- 'The universities need to wake up because they are in danger of losing all orthodontic MSc programmes as the deanery and the NHS would be quite happy to drop this requirement in an effort to save money and get even more clinical care for each trainee. We must unite to defend our credibility as orthodontists and we must make sure the standard of specialist training is enhanced not diminished'.

opinions on the perceived value of training. In this study, 68% of respondents felt they had learnt the correct amount in relation to research and critical appraisal, with only 10% of respondents reporting the research component to be excessive.¹⁴ These findings demonstrate the positive impact undertaking a higher degree has on clinicians adopting an evidence-based approach to providing orthodontic care. Evidence-based dentistry is an approach to providing care that encompasses clinical experience, patient preferences and appraisal of the best available evidence.¹⁸

Currently, to fulfil the research component, the orthodontic curriculum states that it is possible to submit two papers to peer-reviewed journals based on work undertaken during speciality training, rather than undertake a higher degree. However, the majority of respondents in the questionnaire stated a preference of undertaking a higher degree due to the rewards in terms of skills gained and the difficulties with submitting two papers within the speciality training time frame. In addition, other respondents recognised that without undertaking a higher degree, there would be no or limited access to academic support, which could prove challenging considering submission to a peer-reviewed journal is likely to involve research at some level. One could argue that at present, any orthodontic specialist could adequately and solely support such a project. The majority of orthodontic specialists who are currently working will have gained sufficient research skills from undertaking a higher degree during their speciality training

and may feel prepared to do this. However, with time, if fewer orthodontic specialists choose to complete higher degrees, they may feel less able to supervise junior colleagues with their research, which will present difficulties for future trainees.

Generally, undertaking a higher degree was deemed to have a positive impact on career opportunities and job prospects. A high proportion of respondents reported the higher degree had provided them with an insight into a clinical academic career. Despite the higher degree providing an insight into clinical academic careers, it has not addressed the issues facing recruitment and retention of academics. A qualitative study investigating the factors influencing an academic career reported several barriers to an academic career; previous negative research experiences, lack of undergraduate research experience, length of the clinical academic training pathway and negative effect on clinical time and work-life balance. The study highlighted that STs enter an orthodontic career with the primary aim of becoming an orthodontist, not a clinical academic.¹⁹ Therefore, those involved in workforce planning should not rely on the recruitment of orthodontic clinical academics from STs, with more being done at an earlier stage of training to increase awareness of academic careers.

The most frequently reported free-text comments provided by respondents were in relation to finances. Undertaking a higher degree alongside speciality training incurs a financial burden which may impact people's

abilities to buy houses, get married and have children. In a cross-sectional survey of UK orthodontists that had recently completed ST1–3 training, finances played a role in the recruitment of ST3 trainees into consultant training posts (ST4–5).²⁰ This is of concern, considering there is currently a national shortage of NHS orthodontic consultants.²¹ Some respondents were able to put the cost of the higher degree into perspective within the total lifetime earning potential, post specialisation. During speciality training, STs are able to claim tax relief on professional fees, which does reduce the total cost of the fees.²² Whether respondents had applied for this tax relief during their training was not asked in the questionnaire. Despite this, there are inequalities between the institutions regarding university tuition fees. As the SAC and GDC have no influence over the fees academic institutions can charge, one approach to provide equity for STs may be to consider removal of the option to undertake a higher degree from the orthodontic curriculum. However, considering the findings of the study and the positive impact the higher degree has on the completion of speciality training, research skills, patient care and career opportunities, this would not appear to be the preferred approach. Instead, stakeholders responsible for supporting the delivery of excellent healthcare might consider other ways to address the potential financial inequities.

A limitation of this study was the relatively low response rate of approximately 13.3%. Interestingly, the response rate is comparable to those found in similar cross-sectional surveys with response rates of 13.6–20.1%.^{14,23,24,25} As the respondents in this study were recruited via the BOS, it is possible that there is a risk of selection bias. However, it would appear that most UK orthodontists are members of the BOS, as the numbers of orthodontists who were emailed in the study ($n = 1,247$), is similar to the number of orthodontists registered with the GDC ($n = 1,397$).¹ Therefore, the sample included in the study was representative of UK orthodontists. However, considering the low response rate, a degree of caution should be exercised when generalising the findings to all UK orthodontists. A second limitation was that orthodontists were invited to participate in the study irrespective of when they gained their orthodontic qualification. It is possible that dependent on the year of qualifying, orthodontists will have different perceptions of the value of undertaking a higher degree as

part of their speciality training, particularly considering the increasing costs of university fees. However, on the other hand, it is likely that orthodontists who qualified several years ago may have a better perception of the impact that undertaking a higher degree has on an orthodontic career over the longer term. Finally, higher proportions of respondents were working within secondary care. It could be argued that undertaking a higher degree alongside orthodontic speciality training has additional advantages to those wishing to continue in formal training. This was reflected by higher proportions of respondents working within secondary care reporting that undertaking a higher degree was worthwhile. However, just over 30% ($n = 51$, 30.7%) of respondents were working as specialist orthodontists in primary care and almost half ($n = 25$, 49%) of these respondents reported that undertaking a higher degree was worthwhile.

Conclusions

This paper reports the findings of a cross-sectional study investigating perceptions of specialist orthodontists undertaking a higher degree alongside clinical speciality training. Overall, most orthodontists placed great value on undertaking a higher degree as part of their speciality training, with reported benefits including improved scientific and critical appraisal skills, better job prospects and improved career opportunities. The high financial cost of undertaking a higher degree was deemed unfair by some respondents, although most orthodontists felt the benefits of undertaking a higher degree outweighed any associated costs. Significant concern was raised with respect to the possible removal of the requirement to undertake a higher degree from the orthodontic curriculum in the current review of the GDC curriculum. The results of this questionnaire are likely to be of importance to stakeholders who are involved in the planning of postgraduate orthodontic education and reviewing of the orthodontic curriculum.

Due to the lack of research in this area, future research includes a plan to survey STs from other dental specialties who are not currently required to undertake a higher degree as part of their speciality training, to see if there are any similarities or differences regarding the perceptions and experiences of training and whether a higher degree taken

as part of training in other dental specialties would be worthwhile.

Ethics declaration

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article. However, some authors work across both the NHS and University settings.

Author contributions

All authors contributed to the development of the questionnaire-based survey. JJ, JAH and AJI were responsible for data collection and analysis. JJ drafted the manuscript. All authors read, revised and approved the final manuscript.

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References

1. General Dental Council. Registration report – July 2021. Available at https://www.gdc-uk.org/docs/default-source/registration-reports/07.-registration-report--july-2021b54e0c46-a8ed-4dc5-915c-7f53306d366.pdf?sfvrsn=942a8a1c_3 (accessed July 2021).
2. General Dental Council. Specialist lists. 2021. Available at <https://www.gdc-uk.org/registration/your-registration/specialist-lists> (accessed July 2021).
3. UK Committee of Postgraduate Dental Deans and Directors. National Person Specification. 2021. Available at <https://www.copdend.org/postgraduate-training/national-person-specification/> (accessed July 2021).
4. Health Education England. Oriel – Making your application. 2021. Available at <https://specialitytraining.hee.nhs.uk/Recruitment/Oriel-Making-your-application> (accessed July 2021).
5. O'Brien K, Spencer J. A viewpoint on the current status of UK orthodontic education and the challenges for the future. *Br Dent J* 2015; **218**: 181–183.
6. NHS Employers. Pay and Conditions Circular (M&D) 1/2021. Pay award for doctors and dentists in training. 2021. Available at <https://www.nhsememployers.org/sites/default/files/2021-06/Pay-and-Conditions-Circular-MD-12021.pdf> (accessed July 2021).
7. NHS England. Guides for commission dental specialties – orthodontics. 2015. Available at <https://www.england.nhs.uk/commissioning/wp-content/uploads/sites/12/2015/09/guid-comms-orthodontics.pdf> (accessed July 2021).
8. British Orthodontic Society. Orthodontic Speciality Training in the UK. 2013. Available at <https://www.bos.org.uk/Portals/0/Public/docs/Careers/guidelines-on-orthodontic-speciality-training.pdf> (accessed July 2021).
9. The Joint Committee for Postgraduate Training in Dentistry and The Specialist Advisory Committee in Orthodontics. Curriculum and Specialist Training Programme in Orthodontics. 2010. Available at https://www.gdc-uk.org/docs/default-source/specialist-lists/orthodonticcurriculum.pdf?sfvrsn=76e6cfed_2 (accessed July 2021).
10. General Dental Council. Standards for Speciality Education. 2021. Available at: <https://www.gdc-uk.org/education-cpd/quality-assurance/dental-speciality-training> (accessed November 2021).
11. Royal College of Surgeons of Edinburgh. Exam Details – Membership in Orthodontics (MOrth) Part B. 2021. Available at <https://www.rcsed.ac.uk/exams/>

- exam-details-membership-in-orthodontics-part-b (accessed July 2021).
12. Royal College of Surgeons of England. Membership in Orthodontics Part 2. 2020. Available at <https://www.rcseng.ac.uk/education-and-exams/exams/search/membership-in-orthodontics-part-2/> (accessed July 2021).
 13. Online Surveys. The online survey tool designed for Academic Research, Education and Public Sector Organisations. 2021. Available at <https://www.onlinesurveys.ac.uk/> (accessed January 2021).
 14. Oliver G R, Lynch C D, Fleming P S. What I wish I'd learned as an orthodontic trainee: an online survey of British Orthodontic Society members concerning postgraduate training experiences. *J Orthod* 2020; **47**: 116–128.
 15. Dental Schools Council. Survey of Dental Clinical Academic Staffing Levels. London: Dental Schools Council, 2018. Available at <https://www.dentalschoolscouncil.ac.uk/wp-content/uploads/2018/08/clinical-academic-survey-dental-2018.pdf> (accessed October 2021).
 16. University of Bristol. Pathway 3 – Role Profile Level e. 2021. Available at <http://www.bristol.ac.uk/hr/grading/academic/role-profiles/3e.html> (accessed July 2021).
 17. Griffin S. Covid-19: Waiting times in England reach record highs. *Br Med J* 2020; DOI: 10.1136/bmj.m3557.
 18. ADA Centre for Evidence-Based Dentistry. About EBD. 2021. Available at <https://ebd.ada.org/en/about> (accessed July 2021).
 19. Jopson J L, Ireland A J, Fowler P V, Sandy J R, Neville P. Are dentists considering a career in orthodontic clinical academia? A qualitative study into the factors influencing a career in orthodontics. *Br Dent J* 2021; **230**: 308–313.
 20. Quach S, Mittal T, Bell G. Barriers to Post-CCST training in orthodontics: A survey of trainee perceptions. *J Orthod* 2021; **48**: 268–276.
 21. Ireland A J. Do We Need Practitioner Training Schemes in Orthodontics? *Dent Update* 2001; **28**: 518–522.
 22. GOV.UK. Claim tax relief for your job expenses. Available at <https://www.gov.uk/tax-relief-for-employees/professional-fees-and-subscriptions> (accessed July 2021).
 23. Fleming P S, Cunningham S J, Benson P E, Jauhar P, Millett D. Extraction of premolars for orthodontic reasons on the decline? A cross-sectional survey of BOS members. *J Orthod* 2018; **45**: 283–288.
 24. Sandler C, Barry S, Littlewood S, Al-Musfir T, Nazzal H. Orthodontic management of traumatized teeth: A national survey of UK orthodontists. *Dent Traumatol* 2019; **35**: 241–250.
 25. Jennings R, Seehra J, Cobourne M T. The Journal of Orthodontics: A cross-sectional survey of British Orthodontic Society members. *J Orthod* 2021; **48**: 101–109.