

# Why dentists should consider a career in orthodontic academia

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## Key points

Explores some of the historical and current issues facing recruitment and retention in dental academia.

Informs readers of the current gender and ethnic demographics within dental academia.

Increases awareness of the academic training pathway in orthodontics.

## Abstract

Orthodontics, like all areas of dentistry, offers the option to pursue a career in academia. In addition to providing clinical care for patients, academic orthodontists have a role in educating dental students and the wider dental community. There is also the option to engage with and undertake research, which may advance treatment and improve patient care. There is currently a shortage of academic orthodontists in the UK, with institutions reporting difficulties in the recruitment to academic posts. This problem is not only confined to orthodontics but widespread among dentistry. As a result, there is concern regarding the long-term future of dental academia. This paper considers why this might be the case and aims to raise awareness of the shortage in dental academic staff. It will discuss some of the main reasons put forward to explain this shortage and offer information and guidance to those interested in pursuing a career as an orthodontic academic.

## Introduction

In 2019, there were 40,976 dentists and 1,370 orthodontists registered with the General Dental Council.<sup>1</sup> Orthodontics constitutes one of the 13 dental specialities and is focused on facial growth and development, the diagnosis and treatment of dentofacial problems, and improving function, aesthetics, emotional and social wellbeing.<sup>2,3</sup> As a speciality, orthodontics offers individuals varied career options, including working as a specialist in primary care, secondary care and academia, with some individuals working within all three areas. Academic orthodontists are crucial

members of the orthodontic team, in terms of their contributions to teaching, research and scholarship, and are in an ideal position to inspire and recruit future generations of dentists and orthodontists into academia.<sup>4,5</sup> Table 1 lists the grades of academic orthodontists.

The Dental Schools Council carries out surveys on academic staffing levels in UK dental schools every year. In the most recent survey, there were 40 vacant full-time equivalent (FTE) posts across all specialties and grades, from 16 of the 18 dental schools that took part in the survey.<sup>6</sup> If vacant positions are adequately filled, it can indicate a growing and thriving academic workforce. However, 33% of dental schools reported issues in the recruitment of orthodontic academic staff to all grades.<sup>6</sup> This raises a number of issues; without people in the pipeline, particularly with respect to the recruitment of staff to junior positions, people cannot progress along the pipeline, which should ensure all posts are adequately filled. Due to the roles of dental academics, shortages can have detrimental effects on

clinical practice, research and education.<sup>6</sup> It is therefore important to increase awareness of academia as a potential career option for undergraduate and postgraduate dental students, and to try to understand the facilitators and barriers during orthodontic career progression. This paper will attempt to improve awareness by describing the different career options and pathways within orthodontic academia. Research into the potential facilitators and barriers during orthodontic career progression are currently being investigated by the principal author as part of her specialist training.

## Dental academia in the UK

There has been widespread, ongoing concern regarding the future academic workforce since the 1990s.<sup>7</sup> The following section highlights some of the significant changes undertaken in order to address these issues. Despite this, dental academia continues to experience difficulties in the recruitment and retention of staff. In a recent survey of senior dental students, less than 1%

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**Table 1 Example list of academic orthodontists in ascending grade**

Grade of academic orthodontists (Formal academic training)	Grade of academic orthodontists (Clinical teaching)
Lecturer	Teaching associate
Senior lecturer/reader	Senior teaching associate
Professor	Clinical teaching fellow
	Senior clinical teaching fellow
	Professor

Note: Not all grades will be available at all institutions.

**Table 2 Number of FTE professor posts across all dental specialities<sup>4,6</sup>**

	2000	2010	2015	2016	2017
FTE professor across all dental specialties	91	111.4	117	111.6	107.2

planned to pursue an academic career, which demonstrates the considerable complexity surrounding the issue.<sup>8</sup>

The partnership between research and the National Health Service (NHS) underwent significant changes during the 1990s. This led to the launch of the NHS Research and Development (R&D) strategy with the initial aim of adopting an evidence-based approach to providing medical and dental care. Evidence-based dentistry (EBD) is an approach to problem solving that unites a dentist’s clinical experiences with those of the patient (eg, diagnoses, medical histories, values and preferences) and the best available evidence as a means of providing treatment.<sup>9</sup> EBD strives to improve patient autonomy, utilise the findings of research in clinical practice and improve patient care.<sup>10</sup> For this R&D strategy to thrive, adequate numbers of clinical academics are required with skill sets in both teaching and research.<sup>7</sup>

At around the same time, there was increasing concern regarding the future of clinical academia, with diminishing morale among clinical academics, difficulties recruiting to posts and increasing demands to carry out more clinical work.<sup>7</sup> This led to an inquiry, chaired by Sir Rex Richards, examining the views on clinical academic careers, where medical and dental academics were invited to participate in a series of focus groups.<sup>11</sup> Transcripts from the *Richards Report* were later analysed and themes identified, which led to the development of a nationwide questionnaire. The quantitative results of the questionnaire were published in 2000. It identified apprehension among

academic dentists with regards to the practical and organisational elements of an academic career. Questionnaire respondents felt that the increasing pressures of academia were compromising their ability to undertake clinical care, teaching and research.<sup>12</sup>

In 2005 perhaps the most widely recognised report of the time, the *Walport Report*, was published.<sup>13</sup> It highlighted that academic staffing levels were at a minimum viable level, with greater concern in dentistry than medicine.

Walport identified three deterrents to pursuing a career in dental academia:

- Absence of a defined career pathway
- Absence of flexibility with regards to training and geographical mobility
- Absence of supported and structured positions following training, leading to dropouts in the academic training pipeline.

The report led to a number of recommendations for clinical academic training including: the creation of academic training pathways; changes to the funding of posts; and expansion of the dental academic workforce.<sup>13</sup> Following this report, the National Institute for Health Research (NIHR) was created under the Government’s health research strategy, in order to reform research in the NHS, in terms of funding and training.<sup>14</sup>

Almost 15 years on from the *Walport Report*, stakeholders are still expressing concern over the difficulties in recruitment to academic posts, and report that NIHR guidelines are not meeting the current

academic workforce requirements.<sup>15</sup> Health Education England (HEE) is currently reviewing the way that dental healthcare is provided and is seeking ways to reform dental education and training. HEE feel that by incorporating academic and research opportunities into both training and non-training posts, it will help address training capacity and aid modernisation.<sup>15</sup>

**Current academic workforce**

Understanding trends and the current situation in clinical academic staffing levels in terms of numbers and demographics is not only helpful in providing information to stakeholders, so that changes can be made to safeguard the success of the future academic workforce, but to understanding how the pipeline flows and if any (in)equalities exist within the profession.<sup>6</sup> Since 2004 there has been a 40% increase in the number of FTE dental clinical academics, which in part may have been related to the government’s decision at the time, to increase the intake of dental students.<sup>6,16</sup> A UK-Wide Survey of Clinical and Health Research Fellows also identified that there were 75 dental fellows (a person holding a fellowship award relevant to dental research), an increase of 52 since the 2009 survey. Despite the increase in dental fellows, all of the awards were for junior positions and there appears to be a worrying decrease in the number of dentists progressing on to senior academic positions, dropping from six in 2009 to none in the year 2017.<sup>17</sup> The findings of this survey must be treated with a degree of caution, as data do not include people awarded fellowships funded directly by universities. There has also been a decline in the number of FTE academics at professorial level (Table 2), which represents itself as five FTE vacancies.<sup>6</sup>

**Gender and the academic workforce**

In 2005, Advance Higher Education’s Athena Swan Charter was established in order to provide recognition to those advancing female representation in higher education and research with respect to science, technology, engineering, maths and medicine (STEMM).<sup>17</sup> The Athena Swan Charter is based upon 10 key principles, which institutions need to integrate into their policies and practices in order to help improve gender equality and to ensure a fair workplace.<sup>18</sup> Since the introduction of the Athena Swan Charter,

**Table 3 Profile by gender to any academic grade all dental specialities<sup>5</sup>**

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	% change since 2004
<b>Men</b>	438	423	428	484	490	502	569	579	576	551	585	580	556	27%
<b>Women</b>	203	203	206	245	262	279	325	337	371	178	392	404	424	109%

**Table 4 Profile by ethnic background to any academic grade all dental specialities since 2005<sup>5</sup>**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	% change since 2005
<b>BAME</b>	88	100	134	146	141	164	178	228	189	214	221	224	155%
<b>White</b>	521	518	576	589	612	687	698	683	709	715	716	711	36%
<b>Unknown</b>	17	16	19	17	28	42	40	36	31	48	47	45	164%

female representation in academia has improved (Table 3). Women currently make up a larger proportion of the academic workforce under 46 years of age (57%) and the greater proportion of lecturers (58%).<sup>6</sup> However, in a 2017 headcount of academic staff, only 22% of all dental professors were women.<sup>6</sup> Within orthodontics, females contribute to 40% of all academic roles, but there is only a single female professor in orthodontics.<sup>4</sup> A key element of promotion in academia is dependent on carrying out discipline-specific- or pedagogic-related research, career breaks such as a maternity leave may negatively impact on research productivity and inevitably slow down career development.<sup>19,20,21</sup> Vertical segregation occurs when a person does not progress past a certain point in their career based entirely on their gender, age or ethnic background.<sup>22</sup> One might assume the low number of senior female academics in dentistry is evidence of vertical segregation. However, it takes time taken to reach professorial level and, with an increasing number of female lecturers, it may only be a question of time before there are more female professors. It could be argued that this is a simplistic way of viewing career development, which does not take into account the complex issues surrounding career progression.

### Ethnicity and the academic workforce

In the 2017 UK-Wide Survey of Clinical and Health Research Fellows, 72% of clinical academics identified themselves as White, and 25% as Black, Asian and Minority ethnic (BAME). Since 2005 the clinical academic workforce has diversified, with a 155% increase in BAME representation (Table 4). In terms of academic grade, only

8% of BAME groups were at professorial level.<sup>4</sup> Clinical academic dentistry appears to be slightly more diverse than medicine, with 82% of clinical academics identifying themselves as White and 18% as BAME.<sup>23</sup> Research published in 2017 identified that BAME students were more motivated than White students in wanting to pursue a career in academia.<sup>24</sup>

In 2016, six years after the Athena Swan Charter, the Equality Challenge Unit implemented the Race Equality Charter, which is aimed at improving the representation and progression of BAME groups within higher education.<sup>25</sup> It is hoped that this will contribute to more diversity in clinical academia.

### Orthodontic academia

The barriers affecting the decision to pursue a career in orthodontic academia have not yet been fully investigated, but one potential barrier is the lack of information available on academic careers and training pathways. Within academia there are two academic career pathways. Some orthodontists will have undergone formal academic training and career progression through academic training posts, hold a PhD and have a substantial research portfolio. In addition to carrying out clinical duties these academic orthodontists will have significant roles in teaching, research and administration. On the other hand, some orthodontists will have taken a more circuitous route into orthodontic academia via a clinical teaching pathway. These academic orthodontists will be focused on teaching and scholarship and while there is no requirement to carry out research, career progression in part is

related to performance in pedagogic and discipline specific research.<sup>4</sup> The remainder of the paper will describe in some detail the formal orthodontic academic training pathway and also career progression via the clinical teaching pathway, in the hope that this will raise the awareness of academia as a potential career option.

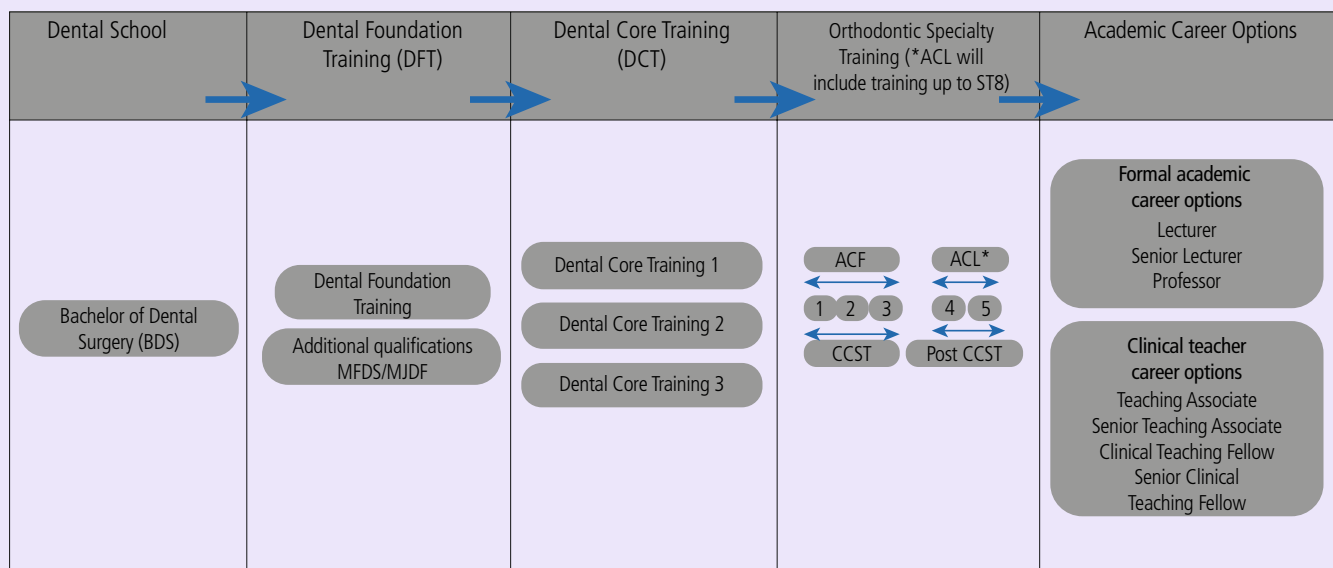
### Entry requirements to orthodontic speciality training

Once a dental student has attained an undergraduate BDS degree or equivalent, they are expected to undergo a period of dental foundation training (DFT) in the NHS. If specialisation is the career aim, then additional training is required in the form of dental core training (DCT), which can last up to three years and offers many the opportunity to gain additional training and education, before then progressing to speciality training. Entry into speciality training is highly competitive. Gaining a postgraduate qualification such as membership with one of the Surgical Royal Colleges and participating in audits and research is highly desirable.<sup>26</sup>

### Orthodontic speciality training

For those not on an academic training pathway, the pathway to become a specialist orthodontist is typically split into junior (ST1–3) and senior (ST4–5) speciality training. As part of junior speciality training (ST1–3), registrars are currently expected to undertake a postgraduate degree, which parallels clinical training, at either Master’s (MSc or MPhil) or professional Doctorate level (DDS).<sup>27</sup> Following junior speciality training (ST1–3), the trainee is eligible to sit the ‘Membership in Orthodontics’ exam and if

**Fig. 1 Example academic orthodontic training pathway.<sup>33</sup> Adapted from Health Education England, Clinical Academic Careers Framework: A framework for optimising clinical academic careers across healthcare professions, 2018**



successful will gain a certificate of completion of specialist training (CCST). At this point they may decide to work as a specialist in primary care, or alternatively they may wish to undertake additional training to become an NHS hospital consultant. In this case they must undertake an additional two years of post-CCST clinical training (ST4-5) before applying for a consultant position.<sup>28</sup>

For those wishing to pursue an academic career, additional qualifications, skills and training are required during training, for which there is a defined clinical academic training pathway. Eventually the academic trainee will not only have a university academic appointment (e.g., senior lecturer) but will also in most cases have an honorary NHS consultant appointment.

### The Academic Training Pathway

This pathway (Fig. 1) can entail the following steps:

#### Academic Clinical Fellowship (ACF)

An ACF post represents the preliminary stage of combined clinical and academic training. An ACF is usually a three-year appointment, of which 75% of the time is allocated for clinical training and 25% for research. Within orthodontics, ACF posts are usually intended for those at the start of their three-year orthodontic speciality training who also wish to pursue a career in academia. At the end of an ACF post, it

is hoped that an individual would continue their academic training by undertaking a training fellowship leading to a PhD, or a postdoctoral fellowship if a PhD has been gained previously.<sup>29</sup> Either way this presents challenges, namely the necessity to develop a research proposal and complete an application for a PhD or post-doctoral fellowship while already undertaking speciality training. Competition for these funded fellowships is intense with medical and dental applications considered together. Funding is available from the research councils, the NIHR or major medical charities, such as the Wellcome Trust. Aspiring dental academics need to work with strong research groups to formulate ideas and craft applications. It is fair to say that funding 'dental research' is challenging considering the emotive nature of some medical proposals.<sup>30</sup>

To gain entry onto a speciality ACF post in orthodontics, applicants must be successful not only at the local ACF interview, but also at the Orthodontic National Recruitment interviews. This is so that they can demonstrate they can achieve the benchmark to be deemed appointable nationally, even though they may not require one of the Health Education England National Training Numbers (NTN). ACF posts are advertised nationally by the NIHR Academy, with applications through Oriel, the UKs portal for medical and dental postgraduate

recruitment.<sup>29</sup> Competition ratios for NIHR dental ACF posts is currently being collected. However, it is known that these posts are highly competitive.<sup>31</sup>

#### Academic Clinical Lectureship (ACL)

According to NIHR, an ACL post represents the second substantive stage of combined clinical and academic training. An ACL will spend 50% of their time in clinical training and 50% progressing their academic development in research and education. This period provides individuals with the opportunity to progress their postdoctoral research and establish their research career. In orthodontics, an ACL post typically commences at ST4. However, appointments can be made at ST3 enabling trainees to continue their training through to the end of post-CCST. ACL posts are for a duration of four years (ST4-8), or until post-CCST has been reached, whichever is sooner. To be considered eligible for an ACL post, specialist registrars must hold a NTN and have completed a PhD or equivalent. NIHR does not currently consider professional doctorates to be equivalent to a PhD. Similar to the ACF posts, applications are made through Oriel and those without an NTN will need to be deemed appointable at the Orthodontic National Recruitment interviews. The NIHR recommends that those interested in an academic career take advantage of both the ACF and ACL posts during speciality training.<sup>32</sup>

**Table 5 University of Bristol academic career progression structure in ascending grade<sup>29</sup>**

Career progression along the formal academic career pathway	Career progression along the academic clinical teaching pathway
<p><b>Lecturer</b> – will be involved in a range of teaching using a variety of methods and will undertake high quality research within their specialist area.</p> <p>Qualifications, skills and experience for progression</p> <p>Working towards or will hold a relevant postgraduate research degree</p> <p>Will manage their own contribution to teaching, research and administration</p> <p>Will be establishing an academic reputation within their area of specialism</p> <p>Will identify sources of funding and help to write bids for research funding</p>	<p><b>Teaching associate</b> – will carry out straightforward teaching and contribute to teaching related administration, whilst developing skills for progression.</p> <p>Qualifications, skills and experience for progression</p> <p>Working towards or will hold a relevant postgraduate research degree</p> <p>Breadth and depth of specialist knowledge</p> <p>Familiarity with the curriculum</p>
<p><b>Senior lecturer/reader</b> – will contribute to the teaching and development of new degree programmes, whilst undertaking research and administration.</p> <p>Qualifications, skills and experience for progression</p> <p>Extensive academic and research experience</p> <p>Will peer review manuscripts for publication</p> <p>Will seek opportunities for collaborative work with other research centres</p> <p>Lead research bids</p>	<p><b>Senior teaching associate</b> – will carry out teaching across levels appropriate to specialism and contribute to administration and course development.</p> <p>Qualifications, skills and experience for progression</p> <p>Ability to teach with a variety of teaching methods</p> <p>Significant breadth of knowledge but may seek some advice and support</p> <p>Develop an awareness of pedagogic research</p>
<p><b>Professor</b> – will have a significant reputation in teaching, leadership and research and will have substantial management and leadership roles with the University.</p> <p>Qualifications, skills and experience</p> <p>Supervise postgraduate students through to graduation</p> <p>Provide effective leadership in relation to research methods</p> <p>Experience of managing research funding</p>	<p><b>Clinical teaching fellow</b> – will carry out teaching at undergraduate and postgraduate levels and contribute to course design, whilst undertaking some management roles.</p> <p>Qualifications, skills and experience for progression</p> <p>Contribution to pedagogy and teaching methodologies</p> <p>Gain experience in co-ordinating roles (e.g. admissions, assessments)</p> <p>May seek funding support for scholarship or research</p>
	<p><b>Senior clinical teaching fellow</b> – will have extensive experience in teaching and administration and will undertake independent scholarly activity or specialism-related research in addition to carrying out pedagogic research</p> <p>Qualifications, skills and experience for progression</p> <p>Successful writing for publication</p> <p>Successfully plan new degree programmes</p> <p>May participate in peer review and apply for grant applications to maximise income for their own or team’s research.</p>
	<p><b>Professor</b> – will have considerable academic experience in teaching and professional leadership. They will be recognised outside of the University for their contributions in teaching and/or research.</p> <p>Qualifications, skills and experience</p> <p>May obtain external funding for posts, equipment and infrastructure</p> <p>Will contribute to the running of the University via committees</p> <p>May provide professional advice to government bodies</p>

**Career progression for orthodontic academics**

Each dental school has a subtly different academic pathway structure depending on the route taken in orthodontic academia.<sup>33</sup> Table 5 summarises the main job roles, and the key qualifications, skills and experience required for career progression for each of the different academic profiles at the University of Bristol.<sup>34</sup>

**Conclusion**

Orthodontic academia can offer individuals a varied career in research, teaching and clinical practice. Over the last 30 years the government has tried to improve the

partnership between research and the NHS in an attempt to address the issues facing the future of dental academia.<sup>9,11,13,14,15</sup> However, institutions are still experiencing difficulties with the recruitment and retention of academics to posts.<sup>6</sup> Unfortunately, these issues are not solely confined to orthodontia academia. There is also a national shortage of NHS orthodontic consultants, with a surprising number of speciality registrars dropping out of training at CCST level, despite the contradiction that there are adequate posts available.<sup>35</sup> In addition to describing potential academic career pathways, it is apparent there is a lack of evidence surrounding what hinders academic orthodontic career progression

beyond a position as a primary care specialist orthodontist. Understanding these issues may identify ways to support individuals during an academic orthodontic career.

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## Correction to: Restoring the unrestorable! Developing coronal tooth tissue with a minimally invasive surgical extrusion technique

The original article can be found online at <https://doi.org/10.1038/s41415-019-0268-9>.

### Clinical article *Br Dent J* 2019; **226**: 789–793

The article *Restoring the unrestorable! Developing coronal tooth tissue with a minimally invasive surgical extrusion technique*, written by Thomas Dietrich, Ralf Krug, Gabriel Krastl & Phillip L. Tomson, was originally published without Open Access in volume 226, issue 10, page 789–793. Thereafter the author decided to opt for Open Choice and to make the article an Open Access publication.

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