

Can UK undergraduate dental programmes provide training in non-surgical facial aesthetics?

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In brief

Provides understanding of changes in regulation.

Promotes awareness of undergraduate curriculum pertaining to alternative subjects.

Discusses volume of dentists practising non-surgical facial aesthetics and the impact on workforce and training.

Aim Recently, more and more dentists have found themselves engaging in the delivery of non-surgical facial aesthetics (NSFA) as part of their regular practice routine. NSFA is a growing field in aesthetic medicine that is practised by a range of clinicians including doctors, dentists and registered prescriber nurses and is an industry estimated to be worth over £3 billion in the UK alone. In the past few years, several public scandals in aesthetic medicine have prompted reactions by several bodies including the Government and Royal Colleges. With Health Education England (HEE) having recently released standards in education, it is clear that a shift in attitude towards training is imminent. With a large volume of dentists making up this NSFA workforce it is reasonable to consider the stance of undergraduate training and the relevance of the existing knowledge within dentistry in the context of the HEE standards. **Method** All dental schools in the UK were contacted to establish the range of subjects taught within the curriculum, with particular reference to those relevant to NSFA. The two largest aesthetic pharmacies were contacted regarding numbers of registered dentists they serve. **Results** Twelve out of 16 dental schools responded. Two-thirds of responding dental schools do not cover NSFA in their curricula. However, many dental schools cover related subjects including: facial anatomy/material science/neuromuscular junction physiology (100%), anatomy of the aging face (66%), pharmacology of botulinum toxin (25%) and ethical-legal implications of aesthetic dentistry/NSFA (50%/42% respectively). **Conclusion** Dentists are well placed to deliver NSFA given their background in relevant subjects and surgical training. With the emergence and growth of such a large multi-disciplinary field it is crucial that dentistry is not left behind. Just as most dental schools have embraced the evolution of cosmetic dentistry and implantology, it would be prudent to consider that training standards around NSFA are reflected in both undergraduate curricula and appropriate post-graduate clinical training for dentistry.

Introduction

Background

The non-surgical facial aesthetics (NSFA) industry represents nine out of every ten cosmetic interventions and 75% of the market. In 2014 a total of 45,000 surgical procedures were undertaken: it is estimated that the cosmetic industry is worth £3.6 billion per year

in the UK alone.¹ Non-surgical facial aesthetic treatments are easily accessible, affordable, relatively non-invasive and acceptable to patients. Despite this, it is important to remember that 'cosmetic interventions can have a profound impact on health and wellbeing'.¹

There are currently no restrictions on who can carry out these procedures and no qualification requirements for NSFA practitioners.²

Dentists, through private prescription, are able to prescribe any medicines listed in the British National Formulary (BNF). It is through this method that dentists can prescribe Botulinum toxin. The non-aesthetic uses of Botulinum toxin in the head and neck region include the treatment of migraines, masseteric hypertrophy, salivary drooling, Frey's syndrome and excessive gingival show.^{3,4} Medical uses of fillers include the treatment of

acne scars, cleft lip fullness, scar revision and anti-retrovirus-related facial lipodystrophy.^{5,6} However, dentists are also permitted to use these techniques for cosmetic application in the provision of NSFA.

The Dentist Act 1984⁷ defines the practice of dentistry as 'the performance of any such operation and the giving of any such treatment and advice or attendance as is usually performed or given by dentists.' The General Dental Council (GDC) regulates the practice of dentistry in the United Kingdom. The application of NSFA is not considered to be within the scope of dentistry and is therefore not under the regulation of the GDC. This prevents the GDC restricting dentists and dental care professionals from providing these treatments or indeed setting standards for clinical practice and education. However, the GDC is very

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clear about its registrants maintaining high professional standards in all areas of practice, including NSFA.⁸ The following is the specific guidance given to GDC registrants offering NSFA procedures:⁹

- To only work within their knowledge and professional competence
- To adhere to the Council's standards at all times, and be prepared to back up the decisions they make
- To ensure that they have appropriate indemnity cover
- To maintain professional standards in relation to advertising these services.

Dental education in the UK is also regulated by the GDC. The broad objectives for undergraduate dental education are stated in its educational guidance document.¹⁰ Undergraduate dental education is unique, bringing together the assessment of the mouth, jaws, face and teeth and treatment planning of interventions that must always consider both form and function, with a strong background in basic sciences (pharmacology, physiology, anatomy and materials).

Regulation of NSFA

The 2014 government report¹¹ set out recommendations that aim to improve the safety, transparency and accountability of the NSFA industry and those who practice NSFA. Further recommendations included the formation of a central register, annual appraisal, and that Health Education England should develop appropriate accredited qualifications. There are also clearly defined minimum standards for premises.

The Medicines and Healthcare Products Regulatory Authority (MHRA) currently classifies dermal filler materials as a medical device. Subsequently, at present, they are not required to be prescribed. In 2014 a government¹¹ report was issued and, along with the support of the British Association of Dermatologists,¹² a recommendation was included that dermal fillers should be a prescription-only medicine in order to regulate their use.

In January 2016 Health Education England (HEE) published^{2,13} two documents outlining guidance for educational providers and for practitioners. The guidance is for Botulinum toxin, dermal fillers, lasers, IPL and LED treatments, chemical peel, skin rejuvenation as well as hair restoration. Health Education England outlines who can do what, and what level of educational qualification is required.

The HEE guidelines suggests a level 7 qualification should be obtained by those wishing to practice NSFA in the UK.

Primary qualifications in medicine, dentistry and veterinary science generally include study equivalent to at least one full-time academic year at level 7 of the framework for higher education qualifications. They are designed to meet in full the qualifications framework descriptors for both bachelor's degrees with honours and master's degrees, and therefore are master's level qualifications. However, for historical reasons they retain the title 'bachelor'.¹⁴

Given that dentists already practice NSFA, and hold a Level 7 (master's level) clinical qualification (BDS), it may be the case that the BDS could be the vehicle for dentists to be able to be trained in NSFA.

We undertook this study to assess the baseline content of the BDS programmes in the UK, with reference to NSFA.

Aims

1. Provide information on the number of dentists practicing NSFA in the UK.
2. Assess baseline content of UK BDS programmes with reference to NSFA
3. Curriculum map BDS programme to the HEE guidelines with reference to Botulinum toxin and fillers.

Methodology

Ethical approval was obtained from the University of Bristol Faculty of Medicine and Dentistry Ethics Committee (15901) on 3rd December 2014.

Policy and report information concerning educational policy, specialist lists, scope of practice and NSFA was extracted from the General Dental Council website (www.gdc-uk.org) in January 2016.

Two large 'aesthetic pharmacies' were contacted to request information on the number of GDC registered practitioners who were registered with the pharmacy.

An electronic questionnaire was sent to all UK dental schools examining what they teach students relating to NSFA. Domains on physiology, pharmacology, anatomy, materials science, clinical practice and ethics and law were included. A space for free text response was also provided.

Varley curriculum mapping^{15,16} was undertaken between the Health Education England Document, *Qualification requirements for the*

delivery of cosmetic procedures: Non surgical cosmetic interventions and hair restoration surgery (November 2015)² and the GDC's *Preparing for Practice Dental Team Learning Outcomes* (revised edition 2015).¹⁰

Each statement in each domain was examined and compared with each of the other curricula by three examiners. Each examiner graded the level of overlap as follows:

Achievement of the section with no significant deficiency (green); achievement of most of the section with some possible areas of deficiency (amber); and not able to demonstrate achievement, or several areas of deficiency (red).

After combining the results of the examiners, any disparity was discussed, and a consensus grade recorded. Where a consensus could not be reached, the lowest level of overlap chosen by any examiner was recorded.

There were no conflicts of interest in the preparation of this paper.

Results

Specialist lists

Table 1 outlines a census of GDC registered dentists in October 2015. There were a total of 40,953 registered dentists. There are currently 16 dental schools and in the region of 1,000 places on the dental foundation year 1 programme annually (976 available in the 2015 DF1 round of recruitment).¹⁷

Pharmacy

Communication with a large aesthetic pharmacy in January 2015 revealed a total of 7,000 prescriber accounts active. Fifteen percent of these were GDC registered. This pharmacy stated they held approximately a 40% market share. The second pharmacy did not respond.

Based on this information there are up to 2500 GDC registered prescribers for aesthetic products in the United Kingdom. This is larger than any single specialist list.

Survey

We received 12 responses (75%) out of the 16 dental schools contacted. The emails were at first addressed to the Dean of the dental school, who was given the opportunity to forward the questionnaire to the appropriate member of staff.

In the case of difficulty in getting staff responses, student representatives were asked to complete the questionnaire instead. Responses were not received from Belfast, Birmingham, Glasgow and Queen Mary's (London).

Basic science

All responding dental schools covered neuro-muscular junction physiology, with three signposting NSFA at this stage (Fig 1). All schools also covered facial anatomy with one signposting NSFA during this part of the course. Two thirds of dental schools covered anatomy of the ageing face, again with one school signposting NSFA. One quarter of dental schools covered the pharmacology of Botulinum toxin, again one with NSFA signposting. All schools had a material science course and one signposted to NSFA.

Clinical practice

None of the dental schools teach the skills of drawing up, administering, injection site identification, management of complications or consent (risk and benefits) for Botulinum toxin or administering injectable filler materials.

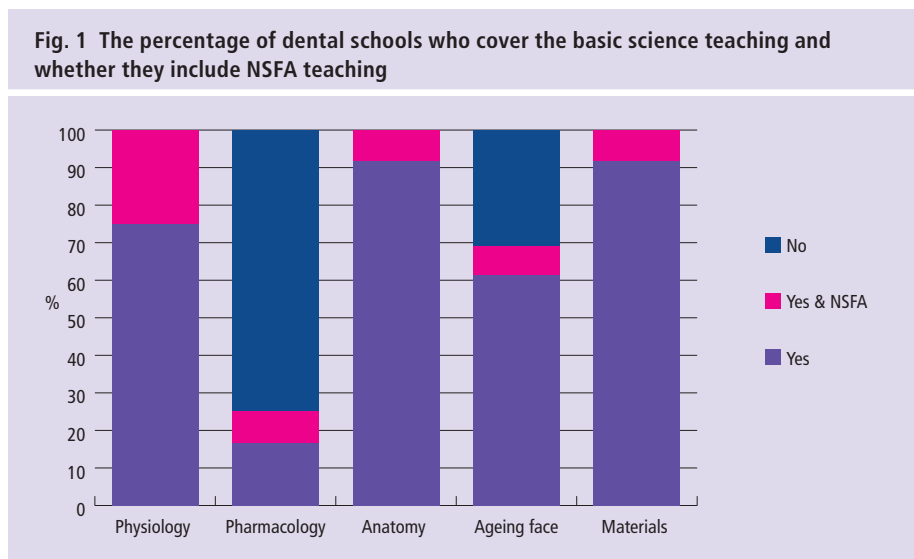
The legal and ethical implications of aesthetic dentistry and NSFA are taught by 50% and 42% of dental schools respectively.

One dental school reported they did teach another type of NSFA practical procedure and went on to clarify that operative, prosthodontic and orthodontic dentistry could be considered a form of facial aesthetics.

Free text responses

Each of the respondents was asked to add any comments at the end of the questionnaire:

‘This topic is only covered in supernumerary lectures offered by external bodies. It is NOT part of the curriculum at this time. Being considered,



but management group recently vetoed an MSc on this topic.’

‘The students are aware of the potential uses of Botulinum toxin including its role in NSFA and ethical/legal implications; however, they do not receive any hands on experience in its use.’

‘NSFA is not covered at all, as far as I am concerned this is postgrad so up to individuals once registered.’

‘This is not a topic required by the GDC. It is covered in passing in microbiology but not as core material’

‘I am a final year dental student and I have answered these questions based on my own experiences throughout dental school but also discussed these questions with students in my

year who have confirmed their experiences match my own. We have received no teaching and have had no experience of NSFA procedures theoretically or practically.’

Curriculum Mapping: HEE & GDC

Health Education England Document, *Qualification requirements for the delivery of cosmetic procedures: Non-surgical cosmetic interventions and hair restoration surgery* (November 2015)² contains learning outcomes for non-surgical facial aesthetic practice at a degree level. The four areas within this document; generic knowledge and skills, cosmetic procedure speciality specific knowledge and skills, Botulinum toxin and

Table 1 GDC figures October 2015				
Registrants by speciality				
Specialty description	Male	Female	Gender unknown	Total
Dental and maxillofacial radiology	14	13	0	27
Dental public health	55	62	0	117
Endodontics	212	65	0	277
Oral and maxillofacial pathology	19	11	0	30
Oral medicine	50	20	0	70
Oral microbiology	3	5	0	8
Oral surgery	544	210	0	754
Orthodontics	720	653	0	1373
Paediatric dentistry	61	179	0	240
Periodontics	247	121	0	368
Prosthodontics	349	101	0	450
Restorative dentistry	240	77	0	317
Special care dentistry	100	211	0	311

dermal fillers, were compared to the GDC's *Preparing for Practice* (2015).¹⁰ Table 2 shows the percentage concordance between the learning outcomes for the two documents; the curricula were compared in the same traffic light manner as used by Varley *et al.*^{15,16}

Discussion

When considering the overall picture of clinical practice in the UK, it is clear that the very nature of clinical dentistry is rapidly changing. It also appears that undergraduate dental teaching has begun to reflect some of what can be considered contemporary clinical practice. Ultimately, ensuring the highest clinical and education standards as well as protection of patients in all aspects of clinical dentistry is of the utmost importance.

Non-surgical facial aesthetic practice is clinical dentistry, and a failure to embrace this contemporary area of practice will only harm patients. The GDC must realise its potential role in the protection of patients undergoing NSFA procedures and in the setting of educational standards for dental undergraduate programmes.

Other areas of cosmetic intervention such as the orthodontic and orthognathic assessment of the face, understanding of occlusion and facial aesthetic units, facial symmetry and facial anatomy are the mainstays of the modern day dentist and are specifically covered in the undergraduate curriculum.

The results show that some dental schools already touch upon aspects of NSFA in undergraduate teaching, and perhaps other dental schools will gradually follow this example and begin to introduce Botulinum toxin (within pharmacology), dermal fillers (within materials science) or the ageing face (within anatomy) into their programmes too. The GDC could speed this process up.

An upward spiral of knowledge and skill attainment is observed in modern clinical education theory. If the goal is to produce safe practitioners then, at the very least, a signposting of these key areas within the dental curriculum should be considered. Furthermore the consideration of dental curriculum recommendations by professional bodies (BAOS, BAOMS etc) is not a new phenomenon with many formulating suggestions and guidelines on what medical or dental undergraduates should know.¹⁸ There is also an increased potential for complaints in aesthetic dentistry and NSFA.¹⁹⁻²¹ Reassuringly, half of

Table 2 Curriculum mapping. Proportion of Learning objectives from the HEE documents relating to 'generic skills', 'cosmetic skills', 'botulinum toxin' and 'dermal filler' that match those from *Preparing for practice*

Generic	Cosmetic	Bot. Toxin	Dermal Filler
88.70%	51.60%	17.60%	23.50%
11.30%	48.40%	17.60%	11.80%
0	0	64.80%	64.70%

the responding dental schools provided their students with at least limited education in these areas.

The government led response to the 2012 PIP breast implant scandal led to the publication of The Keogh review.¹¹ With regards to non-surgical procedures this report recommended a training and accreditation process that would ensure that practitioners are able to undertake the procedures successfully and safely, as well as identify and manage complications. They also recommended those performing potentially harmful non-surgical cosmetic procedures (for example, dermal fillers) should be accountable to a professional regulator. Without setting the clinical standards and embracing this area of practice how can the GDC regulate dentists in this area?

Until recently the NSFA industry has been completely unregulated, with no real definition of aesthetic practice, relying on individual clinical registers to impart best-practice standards on clinicians and leaving it a largely self-regulated sector of practice.²² As a result of this, the industry has seen the emergence of individual private and government lead initiatives to try to tackle the issue^{23,24} and most recently the suggestions of a multi-disciplinary group for substantive regulation.²⁵ There have also been clear steps by both the General Medical Council and the Royal College of Surgeons England²⁶⁻²⁸ in defining best practice guidelines for clinicians.

With the publication of the HEE two-part report on the qualification requirements (and implementation) for practitioners delivering cosmetic procedures in January 2016,^{2,13} it is suggested that teaching around Botulinum toxin and dermal filler are within the national qualification framework (NQF) Level 6 (degree level) and 7 (postgraduate level). Within the document it outlines the four broad areas of the curriculum (Table 2). The GDC has published comments on this proposed framework:

'The GDC welcomes the publication of these training requirements. We are clear that dental professionals carrying out non-surgical cosmetic

treatments as an additional skill should be suitably trained, competent and indemnified to do so.'^{13?}

The publication of these reports by Health Education England and them being welcomed by the GDC is a step towards protecting patients by empowering appropriate training and education pathways. It is important to note that these reports outline a NQF level 6 (degree level) curriculum relating to NSFA. There is a clear cross over with the curricula in these reports and the undergraduate dental degree curricula and those pertaining to early post graduate dental training (level 6 and 7). Curriculum mapping of the HEE documents and the GDC learning outcomes reveals that many learning outcomes are already covered in full or in part by undergraduate dental education in the UK. As NSFA is not currently, according to the GDC, clinical dentistry, there is no appropriate emphasis within undergraduate dental education. The framework for its provision is, however, apparent.

Dental graduates in the UK are trained in other aesthetic procedures already; for example, tooth whitening, and it has been shown that education at undergraduate level has a direct impact on overall patient management. Hatherell *et al.*²⁹ demonstrated an increase in the percentage of students that would propose a treatment plan including whitening, when those students had received more education on this topic. The students who had received more education were also more confident in this area of practice. By incorporating sign-posting of NSFA into undergraduate dental curricula, the GDC can ensure these topics are embraced by dentists and emphasise the importance of patient safety.

Although there may be some dispute about the inclusion of NSFA into the dental undergraduate curriculum, the process can be mirrored to that of implant dentistry. Mattheos *et al.*³⁰ observed the discrepancy between institutions regarding the implementation of teaching in implant dentistry against international benchmarks. They found that

large variations between institutions and countries at both undergraduate and post-graduate level existed and standardisation was required. When translating this to the current picture around NSFA, we can consider that a clear framework and strategy now exists and it is essential that dentistry does not lag behind the other professions in adopting these benchmarks, particularly given the large workforce of dental clinicians likely to be affected.

Conclusion

It is clear from our results that the inclusion of anatomy of the ageing face, Botulinum toxin in pharmacology and dermal fillers in materials science, provide a starting point within the dental curriculum for building foundations to the practice of NSFA.

An understanding of injection sites, risks and complications would also be useful additions to the dental degree curricula and given the implications on general practice, a review of education on consent, law, policy and ethics with regards to both aesthetic dentistry and NSFA is required. Educational media could also be made available to students in order to demonstrate how to store, draw up and administer Botulinum toxin, as well as dermal filler as is in keeping with skills experience for many other practical procedures.

Where there is an opportunity for student selected or optional elements (e.g. intercalation or electives) within dental degrees, students should be signposted to these areas as an opportunity to learn more about NSFA. Dental schools should also strongly encourage students, through student societies, to explore these areas thoroughly. Industry partners, given the potential financial gain, may be ready to help with this.

Ultimately, we believe the GDC could embrace this contemporary area of clinical dentistry, to protect patients fully, ensure

standards within dental education and regulate this area of practice.

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