

Clinical skills of a new foundation dentist: the expectations of dental foundation education supervisors

A. S. M. Gilmour,^{*1} R. J. Jones,¹ J. G. Cowpe¹ and A. D. Bullock²

Key points

Highlights clinical skills expected of a new graduate by dental foundation trainers (educational supervisors).

Ranks skills in relation to a new FD's expected ability based on educational supervisors' feedback.

Reviews and discusses expectations of clinical skills that may be difficult to achieve.

Encourages communication between those involved in UG and foundation training.

Aim To investigate dental foundation (DF) educational supervisors' (ES) expectations of the level of clinical ability expected of a foundation dentist (FD) on entry into foundation training. **Method** Following ethical approval, a pre-piloted online questionnaire was circulated to ESs across England and Northern Ireland (n = 959), requiring respondents to rate their expectations of their FDs' ability at the beginning of the training year, in relation to undertaking 104 clinical skills. A five-point scale and descriptors were provided, ranging from 'on own with confidence' to 'unable to undertake'. Respondents were invited to comment further. Data were imported into IBM SPSS (v20) and descriptive analysis was undertaken. Expectations were assigned values and a mean, 'skill rank score' was generated for each skill. A ranking score closer to five indicated high expectation; closer to one indicated low expectation. **Results** A total of 510 (53%) questionnaires were completed. The study highlighted a range of expectations which were used to identify 'upper-level' (core) skills expected of a new FD. The majority of expectations were in line with UG curriculum guidance; however, certain skills were identified as having overly high expectations and these may need to be modified to align with current guidance. **Conclusions** Understanding the expectations ESs have of a new FD is useful for both dental schools and those involved in DF training. Findings add to the existing evidence base and should generate discussion for those within the education continuum to enhance the successful development of the FD.

Introduction

Upon completion of an undergraduate degree in dentistry in the UK, graduates should have achieved the General Dental Council's (GDC) 'outcomes for registration' in four domains; clinical, communication, professionalism and management and leadership.^{1,2} This document

and another titled *Standards for education*² provide the guidance for undergraduate education in the UK. All education providers (university dental schools) are inspected on this framework and are deemed 'sufficient' or 'insufficient' for registration purposes.

Contesting the quality of the new graduate's clinical ability and suggesting a decline in standards is a phenomenon that has been debated over the last two decades.^{3,4} However, more recently the debate has been reignited with the publication of work such as that by Oxley *et al.*⁵ which question the quality of undergraduate training, as over half the workplace supervisors in this study classified the overall standard of graduates entering dental foundation (DF) training as 'unsatisfactory'. It is therefore imperative that we have a greater understanding of the level of clinical

ability that is expected by those undertaking the supervision of new dental graduates.

Research by Ali *et al.*⁶ explored the concept of preparedness and the attributes that are required of the new graduate to characterise preparedness. However, work to date has not yet clarified the clinical skills that DF trainers expect from a new graduate. This work should provide the framework within which other opinions can be assessed in detail and real improvements made. Previous work such as that of Oxley *et al.*⁵ either gave insufficient detail in their questioning to allow respondents to comment specifically or were personal subjective opinions.⁷ An example in the Oxley *et al.* paper was a question relating to the clinical skills in crown and bridgework. This clearly covers a large area and respondents may have felt that some skills were in

¹Cardiff University, School of Dentistry, Heath Park, Cardiff, UK; ²Cardiff Unit for Research and Evaluation in Medical and Dental Education (CUREMeDE), School of Social Science, Cardiff University, 12 Museum Place, Cardiff, CF10 3BG, UK

*Correspondence to: Alan Gilmour
Email: gilmour@cardiff.ac.uk

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place, whilst others were not, so answered the question negatively.

Aims and objectives

The study was designed to investigate DF educational supervisors' (ES) expectations of a new dental graduate/foundation dentist (FD) in relation to specific clinical skills and to gauge the level of clinical ability expected of an FD by ESs in England and Northern Ireland. This article presents findings related to the expectations of clinical skills of a new graduate/FD – referred to from now on as FD – at the point of graduation; those related to non-clinical skills, in particular to communication and professionalism are reported elsewhere.⁸

Materials and methods

ESs (formerly known as DF trainers) who were active during the 2011 foundation training programmes in England and Northern Ireland (n = 959) were invited to participate in the study. The Defence Services and Scotland were not included as they use a different training and assessment process. This study was not extended to Wales as previous work in this area had already been undertaken. All DF training regions (at the time of the study known as postgraduate Deaneries in Wales and Northern Ireland [Deanery] and local education training boards [LETB] in England) consented to taking part in the study. An online questionnaire (using Bristol Online Survey) was circulated via the 12 LETBs/deaneries (as named at the time of the study) to all ESs towards the end of the training year. Reminder emails were distributed using the

local DF training administrative support. Non-responders were unable to be followed up individually as completion of the survey was optional and anonymous.

Ethical approval was obtained from the Cardiff University, School of Postgraduate Medical and Dental Education Research Ethics Committee. The National Research Ethics Service (NRES) advised that the study fell under the classification of 'education evaluation, akin to service evaluation' and therefore did not require NHS REC review.

The questionnaire

ESs were asked to indicate their expectations of a 'new' FD (a new graduate) in relation to 104 clinical skills across ten clinical themes. These clinical themes were based on those in the 'clinical domain' section of the GDC 'outcomes for registration' and the DF curriculum documents.^{1,9} The 104 clinical skills were incorporated in the questionnaire under ten clinical areas. These included clinical skills that we felt were clearly expected of a new graduate, as well as more complex procedures which would not necessarily be expected without further postgraduate training.

For each clinical skill, ESs were given five response options to indicate the level to which they expected an FD to perform, ranging from 'on own with confidence' to 'unable to undertake'. The descriptors for each option are listed in Table 1, and were provided in the questionnaire. These reflected how an ES would view the extent of an FD's ability, namely their independence to complete the clinical exercise. At the end of each question, ESs were then invited to assess if their current FD had met their expectations by choosing

one of three options, 'met', 'not met' or 'not observed'. Their experience of FDs is presented in a companion paper.¹⁰

Analysis

All data were imported into SPSS v18 (SPSS Inc., Chicago, IL, USA), and descriptive analysis was undertaken. To help analyse these data we ranked expectations by allocating a numerical value to each descriptor (as set out in Table 1) and taking the mean we produced a 'Skill Rank Score'. A ranking score closer to five indicated high expectation; closer to one indicated low expectation.

Results

Completed questionnaires were received from 510 ESs representing a 53.2% response rate. The FDs (2010–11) graduated from 15 different dental schools in the UK and the sample included 40 FDs who graduated from outside the UK. Response rate by LETB/deanery varied widely (from 29% to 96%). The great majority of ESs had been qualified for at least 11 years and had significant experience as practitioners. The extent of training experience, in terms of numbers of FDs, varied from one to more than ten.

ESs' expectations of FDs' competence in performing specific clinical procedures

The full list of clinical skills was ordered from highest to lowest expectations based on the 'Skill Rank Score' described earlier. The clinical skills list was then divided into three groups. Those skills with a ranking of four or above were considered to have 'upper-level'

Table 1 Expectation options and descriptors and assigned values

Assigning numerical values to expectations		
Expectation	Descriptor	Value assigned in coding
On own, with confidence	The new graduate is able to undertake the treatment easily, quickly, and to a good standard without the requirement of the trainer's advice or assistance.	5
On own with limited confidence, slowly	The new graduate is able to undertake the treatment without the requirement of the trainer's advice or assistance. They have a clear understanding about what they were required to do but the treatment was carried out slowly and they may have had some difficulties during the clinical session. They were less confident of the procedure.	4
On own, following advice	The new graduate felt they needed to ask for advice relating to the proposed treatment before or during the clinical session. However, following the trainer's advice, the new graduate was able to finish the treatment successfully on his/her own.	3
With difficulty, needs assistance	The new graduate felt unclear about the treatment that was required and needed to ask for assistance, from the trainer, during the procedure. The trainer's advice alone was not enough for the new graduate to undertake the treatment on his/her own and they needed close assistance for some or all of the procedure to complete this work.	2
Unable to undertake	The new graduate felt they did not have the experience or knowledge to be able to complete the treatment on his/her own. The trainer may need to undertake the procedure while the trainee observes or there may be a need to refer the patient.	1

Table 2 Distribution of ranked expectation by clinical theme

Clinical theme	'Upper level' skills		'Mid-level' skills		'Lower level' skills		Total number of questions
	(Core?)				(Not core?)		
	n	(%)	n	(%)	n	(%)	n
Treatment planning	3	30	7	70	0	0	10
Plastic restorations	6	86	1	14	0	0	7
Fixed prosthodontics	0	0	11	79	3	21	14
Removable prosthodontics*	3	43	4	57	0	0	7
Removable prosthodontics**	1	25	3	75	0	0	4
Endodontics	4	36	2	18	5	46	11
Periodontal therapy	4	40	1	10	5	50	10
Paediatric care	8	57	6	43	0	0	14
Orthodontic treatment	2	33	4	67	0	0	6
Oral surgery	4	29	7	50	3	21	14
Oral medicine	1	14	6	86	0	0	7
Total	36	35	52	50	16	15	104

*Removable prosthodontic techniques with multiple stages eg construction of complete or partial denture, relines or repairs; **One off removable prosthodontic procedures such as design of a partial denture, communication with lab and quality control

expectations; those skills where there was a variation in opinion, in the 'mid-level' (skill rank score between 2.7 to 3.9); and those skills below were considered to have 'lower-level' (skill rank score between 1.1 to 2.4) expectations. It is important to note that there were no clearly defined cut off points provided by the data. Therefore, some clinical skills that are listed as 'mid-level' skills may well be considered as 'upper-level' by a significant number of ESSs. This is discussed in more detail later.

Table 2 lists the number of clinical skills by clinical theme identified as upper, mid or lower level expectations and illustrates the distribution of these skills based on ESS' expectations. The two clinical themes that had the highest level of expectations and were considered as 'upper-level' skills were those skills relating to plastic restorations (n = 6; 86%) and paediatric care (n = 8; 57%). ESSs considered seven out of the ten skills within the treatment planning theme to be in the 'mid-level', with the remaining three skills considered as 'upper-level'. Fixed prosthodontic skills were defined as having 'mid-level' expectations (n = 11; 79%). The majority of ESSs identified endodontics (n = 5; 46%) and periodontal therapy (n = 5; 50%) with 'lower level' expectations. Table 2 provides an insight into what ESSs considered to be the most important clinical skills that dental students should possess upon graduation. However, it was evident that there

were a range of expectations (as reflected in Table 3) across the ten clinical themes. As some clinical themes included skills that fell into the 'upper-level' of expectations, we judged it important to examine the data at an individual skill level.

We first report on those skills over which ESSs had the highest level of expectations. Expectations ranged across the clinical themes with the exception of fixed prosthodontics where ESS' expectations indicated that none of these skills were considered as 'upper-level'. Oral medicine and removable prosthodontics also had lower expectations with only one skill classified in the 'upper-level' category. ESS' expectations of the remaining clinical skills were all considered to be 'mid-level'.

Of the 104 listed clinical skills, 36 were clearly identified as attracting 'upper-level' expectations from ESSs. These are listed in Table 3. The 'Skill Rank Score' would suggest that these clinical skills are 'core'. This 'upper-level' or core group consists of basic preventive advice, including oral cancer risk and advice, simple treatment planning along with undertaking all plastic restorations in adult and deciduous teeth. In relation to the pulp, management of pulp exposure, periapical disease and primary endodontic treatment of teeth as far back as the premolars, are skills seen in this 'upper level'. In addition, the effective use of local anaesthetic injections, simple extractions and simple acrylic

dentures are included in the 'upper-level'. In the younger patient, behavioural management and effective diagnosis of the orthodontic status are also included at this level.

The skills identified as 'mid-level' (Table 4) are those where a higher proportion of ESSs (but not all) did not feel that an ability to undertake these skills 'on own' was required on graduation. A significant proportion of ESSs felt that the construction of complete dentures (Skill Rank Score 3.8) would require at least 'advice' (20%; n = 101) of the ESSs, if not 'assistance' (10%; n = 51) for a new graduate whilst over 40% (n = 214) of ESSs felt this was also the case with the 'restoration of a large broken down tooth' (Skill Rank Score 3.7). Over 40% of ESSs felt the same regarding the construction of crowns including those in the anterior part of the mouth (anterior metal ceramic/ceramic crown [Skill Rank Score 3.6], metal ceramic/ceramic crown on a premolar tooth [Skill Rank Score 3.6], metal ceramic/ceramic crown on a molar tooth [Skill Rank Score 3.5]). Eighteen percent (n = 93) of ESSs did not expect a new graduate to manage suturing without at least some assistance. In addition, over 17% (n = 87) of ESSs expected that an FD would need some assistance with molar endodontic procedures, whilst a further 24% (n = 124) indicated that they expected some advice would be required.

When providing a chrome cobalt partial denture over 57% (n = 291) of ESSs expected

Table 3 Clinical skills identified with 'upper level' expectations (cont. on page 77)

Skills (upper level) n = 36	QN°	Clinical skills – upper level expectations	Clinical theme	On own, with confidence %	On own with limited confidence, slowly %	On own, following advice %	With difficulty needing assistance %	Unable to undertake %	Skill rank score
1	54	Give effective oral hygiene advice	Periodontal therapy	91.6	8	0.4	0	0	4.9
2	11	Restore single surface (occlusal) amalgam or composite	Plastic restorations	86.9	12.4	0.8	0	0	4.9
3	67	Provide effective diet and oral hygiene advice to parents/guardians and children	Paediatric care	79.8	18.4	1.6	0.2	0	4.8
4	84	Perform effective local anaesthetic procedures	Oral surgery	77.6	21	1.4	0	0	4.8
5	15	Restore CI V cavity with plastic restoration	Plastic restorations	74.7	22.5	2.7	0	0	4.7
6	69	Effectively undertake fissure sealant procedures	Paediatric care	73.7	24.3	2	0	0	4.7
7	12	Restore 2 surface (MO) amalgam or composite	Plastic restorations	69.6	28.8	1.4	0.2	0	4.7
8	57	Undertake simple non-surgical scaling and root surface debridement	Periodontal therapy	70	26.7	3.1	0.2	0	4.7
9	1	Dentate minimal dental disease	Treatment planning	66.9	29	3.9	0.2	0	4.6
10	55	Make an accurate diagnosis of the periodontal condition	Periodontal therapy	65.7	30.2	3.9	0.2	0	4.6
11	68	Provide effective caries prevention measures such as fluoride supplements	Paediatric care	67.3	25.7	6.7	0.4	0	4.6
12	16	Restore a CI III composite	Plastic restorations	59.6	36.7	3.5	0.2	0	4.6
13	13	Restore 3 surface (MOD) amalgam or composite	Plastic restorations	57.8	37.6	3.7	0.8	0	4.5
14	70	Undertake simple restorations in permanent teeth in children	Paediatric care	55.5	41.6	2.7	0.2	0	4.5
15	89	Diagnose and manage pericoronitis	Oral surgery	61.8	29.2	8.4	0.6	0	4.5
16	104	Identify oral cancer risk factors from the history and examination and provide appropriate advice	Oral medicine	60.2	31	5.7	2.9	0.2	4.5
17	2	Partially dentate minimal disease	Treatment planning	56.3	34.9	7.8	1	0	4.5
18	66	Undertake simple restorations in deciduous teeth	Paediatric care	49.6	45.5	4.1	0.8	0	4.4
19	17	Restore a CI IV composite	Plastic restorations	51	41.6	7.1	0.4	0	4.4
20	88	Diagnose and manage a dry socket	Oral surgery	53.5	34.3	11.2	1	0	4.4
21	85	Extract erupted teeth	Oral surgery	44.7	46.3	6.9	1.8	0.4	4.3
22	4	Dentate simple periodontal disease (BPE 3)	Treatment planning	46.1	40	13.3	0.6	0	4.3
23	56	Make an effective treatment plan for the periodontal condition	Periodontal therapy	44.7	40	14.3	1	0	4.3
24	65	Effectively diagnose and manage caries in young children	Paediatric care	38.8	49.2	11	1	0	4.3
25	81	Recognise the difference between normal occlusal development and malocclusion	Orthodontic treatment	45.1	37.8	12.7	3.9	0.4	4.2
26	45	Undertake primary endodontic treatment in an anterior tooth	Endodontics	34.3	50	12.5	3.1	0	4.2
27	76	Manage extraction of primary teeth under LA	Paediatric care	31.2	51.4	16.3	1.2	0	4.1

Table 3 Clinical skills identified with 'upper level' expectations (cont. from page 76)

Skills (Upper level) n = 36	QN°	Clinical skills - upper level expectations	Clinical theme	On own, with confidence %	On own with limited confidence, slowly %	On own, following advice %	With difficulty needing assistance %	Unable to undertake %	Skill rank score
28	38	Addition of teeth to an existing partial denture	Removable prosthodontic restorations	36.3	39.4	21.6	2.4	0.4	4.1
29	44	Effectively manage acute periapical abscess	Endodontics	31.8	47.3	17.5	3.3	0.2	4.1
30	34	Acrylic partial denture	Removable prosthodontic restorations	30.2	49	18.2	2.4	0.2	4.1
31	43	Effectively manage a vital pulp exposure	Endodontics	31.8	44.7	20.4	3.1	0	4.1
32	36	Repair to an existing complete/partial denture	Removable prosthodontic restorations	34.9	35.5	27.1	1.6	1	4
33	46	Undertake primary endodontic treatment in premolar tooth	Endodontics	26.5	53.3	14.1	6.1	0	4
34	64	Effectively manage the behaviour of young children	Paediatric care	20.4	62	14.1	3.5	0	4
35	80	Appropriately refer a patient for orthodontic treatment at the correct age	Orthodontic treatment	31	40.4	24.7	3.5	0.4	4
36	41	Communicate effectively with the laboratory through written and verbal means	Removable prosthodontic restorations**	28.6	43.1	23.9	3.9	0.4	4

that an FD would need at least some advice whilst almost 25% expected they would need at least to assist an FD when undertaking a post retained crown or and ceramic veneer. Most retreatment endodontic procedures and bridgework were at the lower end of the 'mid-level' expectations.

Discussion

The main aim of this paper was to investigate the expectations ESs have of a new graduate embarking on DF training. This would appear to be an important consideration, but apart from subjective opinion and a few publications, little has been reported.^{3,5,6,11,12} However, these expectations need to be set in the context of the GDC, who have a quality assurance role in undergraduate education and so have oversight of the education provision at all UK dental schools. The GDC's *Preparing for practice* document, introduced in 2010 and updated in 2012/15, outlines the learning outcomes that are expected of a new registrant.¹ Outcomes are listed under four key areas; clinical, communication, professionalism and management and leadership. The ESs' expectations and experience relating to the other three domains has been reported elsewhere by Gilmour *et al.*⁸ In addition the GDC has published the updated 'Standards for Education' document which

sets out what is expected of a new graduate and university education providers, in the undergraduate training of a dentist.² Further guidance to university education providers is outlined in the 'Profile and Competences for the graduating European Dentist' (Association of Dental Education in Europe) where a detailed list of competences (as opposed to learning outcomes) have been developed to help guide and unify the skills that new graduates should possess on completion of a European undergraduate dental degree.¹³

In this discussion we have considered ESs' expectations in the context of the GDC guidance and highlight where there could be some disparity, as well as highlighting where ESs' expectations may be difficult for dental schools to achieve.

This study investigated the expectations of ESs and the ranking of skills allows us to have insight into their priorities in relation to clinical skills taught. By documenting the perspectives of ESs, this study provides a valuable contribution to the debate about expected standards of practice of the new dental graduates. However, although the response rate of this study was reasonable compared to similar surveys of ESs, it must be acknowledged that the findings are only representative of just over half of the ESs who were trainers at the time of the study. Furthermore there was a large variation in

response rate across training areas, with some as low as 29% and others as high as 96%. As previously mentioned when considering the data trisection and categorisation of skills into upper, mid and low-level skills it must be acknowledged that there was no clear demarcation between the groups and that these definitions are open to interpretation. Lastly, when asking ESs about their expectations we must consider if this is the expectation based on previous experience of new graduates or what they hoped and expected to see.

The descriptors for the expectations were designed with the ES in mind, specifically how they would interact with the new graduate in the practice setting and based around independence. High expectations ('upper-level' skill rank score) suggest that ESs view this as a core or essential skill that an FD should manage independently and there were no surprises in this. The clinical skills attracting 'mid-level' expectations are perhaps more ambiguous. There was not a clear cut-off point which distinguished these from the 'core' and there were some surprises here. For example, 30% of ESs felt that a new graduate would require assistance or advice for a patient who required a complete denture and 40% felt the same about crown construction.

Many of the skills attracting 'upper-level' expectations, as rated by ESs, are clearly

Table 4 Clinical skills identified with 'mid-level' expectations (cont. on page 79)

Skills (Mid-Level) n = 52	QN ^a	Clinical skills - mid-level expectations	Clinical theme	On own, with confidence %	On own with limited confidence, slowly %	On own, following advice %	With difficulty needing assistance %	Unable to undertake %	Skill rank score
37	77	Manage extraction of permanent teeth in a child under LA	Paediatric care	23.5	51.2	20.4	4.9	0	3.9
38	87	Manage and prevent the common peri-operative and post-operative complications of extraction and minor oral surgery – know when to refer	Oral surgery	30.8	35.9	28	5.3	0	3.9
39	3	Edentulous wearing old complete dentures	Treatment planning	27.3	44.3	21.8	6.1	0.6	3.9
40	102	Prescribe a symptomatic treatment for recurrent aphthous ulcers	Oral medicine	29.4	36.7	27.5	5.9	0.6	3.9
41	79	Explain to patient & parent the role of IOTN in the provision of orthodontic care	Orthodontic treatment	24.7	42.9	23.7	8	0.6	3.8
42	90	Recognise the need for surgical extraction	Oral surgery	26.7	35.7	31.4	6.3	0	3.8
43	58	Accurately prescribe topical or systemic antibiotics for periodontal diseases	Periodontal therapy	0.4	1.4	4.5	35.1	58.6	3.8
44	103	Prescribe an adequate treatment for halitosis	Oral medicine	25.5	39.6	26.7	7.3	1	3.8
45	37	Reline to an existing complete denture	Removable prosthodontic restorations	22.4	40.4	32.4	4.5	0.4	3.8
46	100	Prescribe an adequate treatment for oral candidiasis	Oral medicine	24.3	37.6	30.4	7.5	0.2	3.8
47	40	Modify the tooth position on a wax try-in	Removable prosthodontic restorations**	21	46.5	22.5	9.6	0.4	3.8
48	86	Remove simple erupted roots with forceps/elevators including tooth/root sectioning to facilitate roots elevation	Oral surgery	27.3	36.5	22.7	13.1	0.4	3.8
49	32	Complete denture	Removable prosthodontic restorations	15.7	54.3	19.8	10	0.2	3.8
50	72	Understand the guidelines for referral for extraction of teeth under GA	Paediatric care	27.1	25.9	39.8	6.9	0.4	3.7
51	39	Effectively design a partial denture	Removable prosthodontic restorations**	17.5	43.3	30.8	8.2	0.2	3.7
52	6	Dentate several large carious lesions simple periodontal disease (BPE 2-3)	Treatment planning	15.7	42	35.7	6.5	0.2	3.7
53	14	Restore large broken down tooth	Plastic restorations	13.5	44.5	35.7	6.3	0	3.7
54	21	Metal ceramic/ceramic crown on a premolar tooth	Fixed prosthodontics	14.1	44.7	32.5	8.4	0.2	3.6
55	19	Anterior metal ceramic/ceramic crown	Fixed prosthodontics	14.5	43.3	32.9	8.8	0.4	3.6
56	75	Undertake root canal treatments on permanent teeth when appropriate	Paediatric care	15.9	41.8	31.4	10	1	3.6
57	82	Judge the severity of a malocclusion and explain to patient & parent the likely treatment requirement	Orthodontic treatment	20.6	35.9	28.2	12.9	2.4	3.6
58	83	Prescribe fit and adjust a removable appliance for space maintenance or simple tooth tipping	Orthodontic treatment	3.5	12.7	28	31	24.7	3.6
59	42	Effectively quality control laboratory work in relation to removable prosthodontics	Removable prosthodontic restorations**	16.5	39.2	31.6	12	0.8	3.6
60	78	Accurately assess the orthodontic treatment need (IOTN)	Orthodontic treatment	19	39.8	25.1	12.9	3.1	3.6
61	101	Manage primary and secondary Herpes Simplex lesions appearing on intraoral tissues	Oral medicine	18.8	35.5	32.4	12.2	1.2	3.6
62	5	Dentate minimal caries complex periodontal disease (BPE 4)	Treatment planning	12.2	40	39.6	8.2	0	3.6

Table 4 Clinical skills identified with 'mid-level' expectations (cont. from page 78)

Skills (Mid-Level) n = 52	QN°	Clinical skills - mid-level expectations	Clinical theme	On own, with confidence %	On own with limited confidence, slowly %	On own, following advice %	With difficulty needing assistance %	Unable to undertake %	Skill rank score
63	22	Metal ceramic/ceramic crown on a molar tooth	Fixed prosthodontics	12.9	42.2	31.8	12.7	0.4	3.5
64	92	Perform wound closure by suturing using appropriate suture materials	Oral surgery	16.3	40.2	25.3	17.5	0.8	3.5
65	47	Undertake primary endodontic treatment in molar tooth	Endodontics	12	46.7	24.3	16.3	0.8	3.5
66	74	Undertake pulp treatments on deciduous teeth	Paediatric care	10.6	36.5	38.2	13.3	1.4	3.4
67	25	Resin retained bridge (Maryland)	Fixed prosthodontics	10.2	30.8	46.3	12.2	0.6	3.4
68	35	Chrome partial denture	Removable prosthodontic restorations	9.4	33.1	43.1	13.9	0.4	3.4
69	71	Effectively manage traumatised anterior teeth	Paediatric care	10.2	30.4	46.3	12.7	0.4	3.4
70	33	Copy denture (complete denture)	Removable prosthodontic restorations	10.2	33.7	39.2	14.7	2.2	3.4
71	99	Detect difference between oral leukoplakia and a candidiasis infection	Oral medicine	11.8	33.7	32.5	20.6	1.4	3.3
72	98	Identify both premalignant and malignant oral lesions and order a biopsy	Oral medicine	15.5	28	30.8	22.2	3.5	3.3
73	7	Dentate simple large carious lesions complex periodontal disease (BPE 3-4)	Treatment planning	4.7	33.3	45.5	16.1	0.4	3.3
74	91	Assess surgical management for a failed extraction or for elective root removal or for lower third molar removal	Oral surgery	11.8	24.5	39	20.6	4.1	3.2
75	20	Post retained anterior metal ceramic/ceramic crown	Fixed prosthodontics	6.5	29.4	39.6	22.4	2.2	3.2
76	73	Appropriately prescribe and provide stainless steel crowns on deciduous teeth	Paediatric care	9.6	26.3	39	19.6	5.5	3.1
77	26	2 unit cantilever metal ceramic bridge	Fixed prosthodontics	6.1	23.9	48.2	20.6	1.2	3.1
78	18	Anterior ceramic veneer	Fixed prosthodontics	5.3	26.1	44.7	21.6	2.4	3.1
79	8	Dentate heavily restored dentition - failing. Simple periodontal disease	Treatment planning	5.9	21.2	43.7	28.2	1	3
80	23	Gold inlay/onlay	Fixed prosthodontics	5.1	24.7	40	26.1	4.1	3
81	31	An assessment of the quality of technical work and provide effective feedback to the laboratory	Fixed prosthodontics	7.3	20.8	39.6	28.4	3.9	3
82	95	Manage non-airway threatening acute infection presenting intra-orally eg, incision/drainage of an isolated fluctuant swelling and appropriate conservative or non-conservative management of the offending tooth	Oral surgery	11.8	18.4	31.8	27.6	10.4	2.9
83	93	Undertake surgical removal of simple roots with mucoperiosteal flap and bone removal	Oral surgery	5.9	22.2	29.2	37.8	4.9	2.9
84	10	Partially dentate – older significant generalised toothwear moderate periodontal disease	Treatment planning	2.7	18	38.6	35.9	4.7	2.8
85	24	Aesthetic inlay/onlay (ceramic or composite)	Fixed prosthodontics	3.1	16.3	42.2	31.8	6.7	2.8
86	48	Re-treat a root canal treated anterior tooth	Endodontics	3.5	15.9	38.8	35.3	6.5	2.7
87	9	Dentate young - significant anterior toothwear	Treatment planning	2.9	16.3	38.2	37.3	5.3	2.7
88	27	3 unit fixed-fixed metal ceramic bridge	Fixed prosthodontics	2.4	17.1	40	33.7	6.9	2.7

fundamental skills required of an FD, skills that could be expected to be undertaken without advice or assistance, albeit slowly. Along with preventive advice and simple restorations and extractions, ESs expect the FD to be able to manage endodontic procedures on the anterior and premolar teeth. However, it is clear that ESs hold different expectations when FDs approach such procedures on molar teeth. In this case, 17% of ESs (n = 87) expected an FD would need assistance although almost 60% (n = 299) felt that the FD should be able to undertake such procedures without any assistance or advice. This is an area where there may perhaps be agreement between the GDC guidance and the majority of trainers. The GDC guidance in this area (Outcome 1.14.8; page 21) does not differentiate in this area; stating that, on graduation, a new dentist should be able to, 'determine the prognosis and undertake appropriate non-surgical treatments to manage pulpal and periradicular disease for uncomplicated deciduous and uncomplicated permanent teeth'.¹ This learning outcome is somewhat ambiguous and does not differentiate the increasing complexity of endodontic procedures performed on multi-rooted teeth and uses the term 'uncomplicated', leaving university education providers with a dilemma. In addition, students are unlikely to experience sufficient molar endodontic procedures on patients in their undergraduate career to ensure competency on graduation. As experience in this skill may be limited it would seem likely that such a procedure would require close supervision of the FD – the 'safe beginner'. Some university education providers may interpret the guidance as not requiring the provision of such experience, instead concentrating on the 'core' skills of simpler endodontic procedures by interpreting these as 'uncomplicated' and molars as 'complicated'. Indeed, a later GDC outcome (1.14.10; page 21) which suggests the need to evaluate complex treatments and refer accordingly could be interpreted to mean that molar endodontic procedures are too complex for undergraduate education.¹

In contrast, in relation to complete dentures, surprisingly the ESs' expectations are less than expected with 30% (n = 152) expecting that they would need to at least give advice to an FD undertaking this procedure. The GDC learning outcomes are, however, quite clear here, stating that a new graduate should 'assess the need for design, prescribe and provide mechanically sound partial complete dentures'

(Page 21; Outcome 1.14.11).¹ In both the endodontic and complete denture cases there is perhaps the realisation by some ESs that the procedure is of such complexity that experience is required before competence is fully achieved and that this would not have been achieved as an undergraduate. In the case of complete dentures, the number of such cases is reducing nationally, especially in certain parts of the country through changes in dental disease experience/management and increasingly schools are finding it difficult to recruit suitable cases for undergraduates. Perhaps the significant percentage/number of ESs who indicated that they expected a new graduate to manage such cases, should reflect on this, and ask if their expectation is based on their own undergraduate experience when complete denture construction was routine.

Similar arguments could be articulated in relation to crowns, chrome cobalt dentures and post retained crowns. This might suggest that the changing dental needs of the population along with changes in approach to disease management should alter the guidance given to education providers as to what clinical skills are required on graduation. A realisation that undergraduate education is about ensuring that the basic building blocks of clinical competence are firmly established before embarking on more complex, technically involved skills must be ensured. In addition the continuum of education, of which foundation training is a part, implicitly acknowledges the limitations and variability of undergraduate education which should not be expected to 'produce' the 'finished dentist' at graduation. The next and further stages of education are intended to provide support for the training of FDs, who will have graduated with varying levels of experience.

In previous work we reported that education providers have been criticised by ESs as preparing dental graduates 'not fit for purpose'.^{7,14} This work has attempted to look at the expectations of ESs to allow discussion based on data rather than subjective opinion. It is clear that the expectations of ESs are important to the overall discussion but need to be considered in the context of the GDC guidance and the changing demographics of the population. The overall impression is that there is value in encouraging much closer links between undergraduate and DF training providers so that appropriate educational data, challenges and information on student experience are transferred.

Conclusion

It is important to understand ESs' expectation of a new graduate. Only once these are understood can discussions between LETBs/deaneries and dental schools commence. These discussions should be shared with the GDC who oversee the standards of education providers. It is important that all involved realise the continuum of education that needs to occur between undergraduate and foundation training, including the sharing of data and resources to facilitate this transition. The findings reported here add to the existing evidence base and in a companion paper¹⁰ we aim explore ESs' views on whether their expectations were met.

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