OPINION
Claudia Heggie, Judi Humphreys, Laura Gartshore and Sondos Albadri
DOI: 10.1308/rcsfdj.2021.39

COVID-19: Training disruption and opportunities experienced by UK paediatric dentistry trainees

by Claudia Heggie, Judi Humphreys, Laura Gartshore and Sondos Albadri
In collaboration with CONNECT (Child Oral health NatioNal rEsearch CollaboraTive)

What impact did the pandemic have on paediatric dentistry training?

Authors: Claudia Heggie* @ClaudiaHeggie, Dental Core Trainee and Honorary Research Fellow; Judi Humphreys @judi_humphreys, NIHR Academic Clinical Fellow in Paediatric Dentistry; Laura Gartshore @LauraGartshore, Senior Lecturer and Honorary Consultant in Paediatric Dentistry; and Sondos Albadri @AlbadriSondos, Professor and Honorary Consultant in Paediatric Dentistry, University of Liverpool, UK

*: Corresponding author
E: claudia.heggie@nhs.net

Keywords: paediatric dentistry, training, COVID-19

The COVID-19 pandemic resulted in an immediate and dramatic impact on dental education and training worldwide.[1,2] Following evidence that coronavirus transmission occurs via aerosol,[3] the initial wave of the pandemic saw a radical reduction of routine dental care. The chief dental officers of England, Scotland, Wales and Northern Ireland advised provision of emergency care alone, with a particular reduction in aerosol generating procedures.[4,5] Wherever possible, face-to-face contact was replaced with telephone triage and advice. Where aerosol generating procedures were required, the use of FFP3 respirators was recommended,[6] which led to unprecedented global demand and procurement shortages.[7] Regional urgent dental care centres were established for delivery of urgent and emergency care, often situated in tertiary dental hospitals, resulting in reduction of specialty services.[8]

In the UK, there has been geographical variation in infection rates, severity of disease and testing rates.[9] During the peak of the pandemic, dental trainees were asked to undertake new duties, with varying levels of redeployment reported among dental core trainees.[10] Postgraduate training in the form of lectures, tutorials and courses has further been disrupted,[11] with a subsequent increase in virtual teaching delivery. COVID-19 outcomes for annual review of competence progression[12] were put in place to reflect disruption in training and for those who had specialty fellowship examinations, these were deferred.[13]

Changes to working habits have presented opportunities alongside difficulties. A commentary from the perspective of two oral medicine trainees in London reported varying levels of redeployment, cancellation of conferences and courses, limitation of teaching and presentation opportunities, suspension of professional examinations and extension of training. On the other hand, increased time for academic research, quality improvement and the opportunity to become involved in management and systems change were also noted.[8]

This is supported by a scoping review of medical trainees, many of whom have reported more available time for research during the pandemic.[14] Nevertheless, this review found that COVID-19 had had a significant impact on medical junior doctor training and education, including negative effects on clinical exposure, delivery of training and trainee concerns around career progression. The impact on wellbeing, practice and progression of gastroenterology trainees and cardiothoracic trainees in the UK and obstetrics and gynaecology residents in Italy has also been explored.[15–18]

Adding to this research, the General Medical Council national training survey was adapted to survey trainees on their experiences during the pandemic.[19] Similarly, the Faculty of Dental Surgery at The Royal College of Surgeons of England conducted a survey of members' experiences following resumption of dental services in June 2020.[20] However, at the time of writing, no research could be located in the literature regarding dental specialty trainees. The perceptions and experiences of UK-based paediatric dentistry specialty trainees during the COVID-19 pandemic are therefore unknown.

Training structure

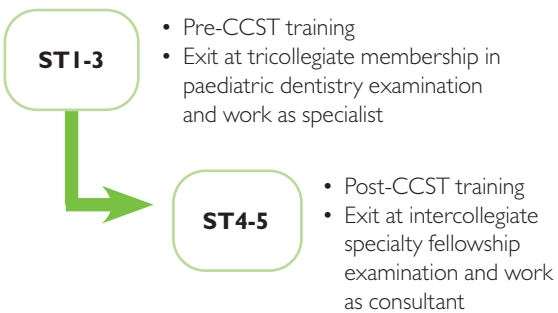
In the UK, paediatric dentistry specialty training consists of three to five years of training (Figure 1). The first three years (ST1–ST3) are prior to award of the Certificate of Completion of Specialist Training (CCST). Trainees can then opt to complete further training in years 4 and 5 (ST4–ST5) in order to be qualified for consultant positions. This is referred to as post-CCST training.

During training, specialty trainees work in different clinical environments including tertiary dental hospitals, community dental services and children's hospitals. They experience a variety of clinical activity such as outpatient clinics, inpatient assessments, and dental treatment with local anaesthesia, sedation and general anaesthesia. The delivery of this clinical training is supported by local teaching as well as regional and national teaching and conferences. The majority of trainees are situated in England, with fewer training posts available in Scotland, Wales and Northern Ireland. Paediatric dentistry trainees on academic training pathways have dedicated time to complete dental research alongside their specialty training. The aim of this study was to explore the degree of training disruption as well as the opportunities experienced by paediatric dentistry specialty trainees during the initial phase of the COVID-19 pandemic.

Methods

The target population was current paediatric dentistry specialty trainees who were participating in clinical activity at the time of the first phase of the pandemic, from March 2020 to the time of survey distribution in June 2020. This project was conducted in collaboration

Figure 1 Structure of paediatric dentistry specialty training in the UK



with CONNECT (Child Oral health NatioNal rEsearch CollaboraTive), who supported protocol design and completion of the survey by trainees through their national network. An anonymous online survey method was adopted and ethical approval was granted by the University of Liverpool.

Inclusion and exclusion criteria were applied (Table 1). Consent was sought prior to participation and dichotomous questions were utilised at the outset to exclude any trainees who did not meet the inclusion criteria. These respondents were excluded from the survey at this point.

Item generation was conducted following literature review and through discussion. Concepts for exploration of the research question were defined and item reduction was completed to minimise responder burden. The questionnaire was pre-tested and piloted with dental core trainees in Merseyside.

The British Society of Paediatric Dentistry trainees' group maintains a contemporary email communication list. Owing to a small target population and a less than 100% response rate being anticipated, no sampling took place.

A blended questionnaire was finalised consisting of demographic questions as well as questions eliciting quantitative and free text responses. Closed-ended questions included mixed-item response formats, which were exhaustive and mutually exclusive. Five-point Likert scales were incorporated to determine participant agreement in relation to the level of disruption experienced, the format of training received and the overall impact on their specialty training. Open-ended questions were employed to explore any themes not previously identified. This electronic survey was administered via Qualtrics® (Seattle, WA, US).

Table 1 Inclusion and exclusion criteria for survey respondents

Inclusion criteria	Current paediatric dentistry specialty trainees in the UK holding a national training number, including those out of programme who have been redeployed and those who have had training disrupted because of shielding advice
Exclusion criteria	Trainees out of programme who have not been asked to return to clinical activity or who have not been redeployed during the survey period, such as those on maternity leave and those out of programme for research

Following pre-notification, the survey was administered for a three-week period during June 2020. Participants were asked to complete the survey only once and participation was truly anonymous. Reminders were disseminated to the eligible population at pre-specified intervals.

After survey closure, data were extracted to Excel (Microsoft, Redmond, WA, US). Quantitative responses underwent descriptive statistics and qualitative responses underwent thematic analysis following an inductive approach by two team members (CH and JH), with any disagreement resolved by a third party (LG).

Results

At the time of survey distribution, the trainees' group consisted of 57 members, 3 of whom were based in

Figure 2 Reported level of disruption during the COVID-19 pandemic in each aspect of specialty training. 'Strongly agree' indicated a high level of disruption.

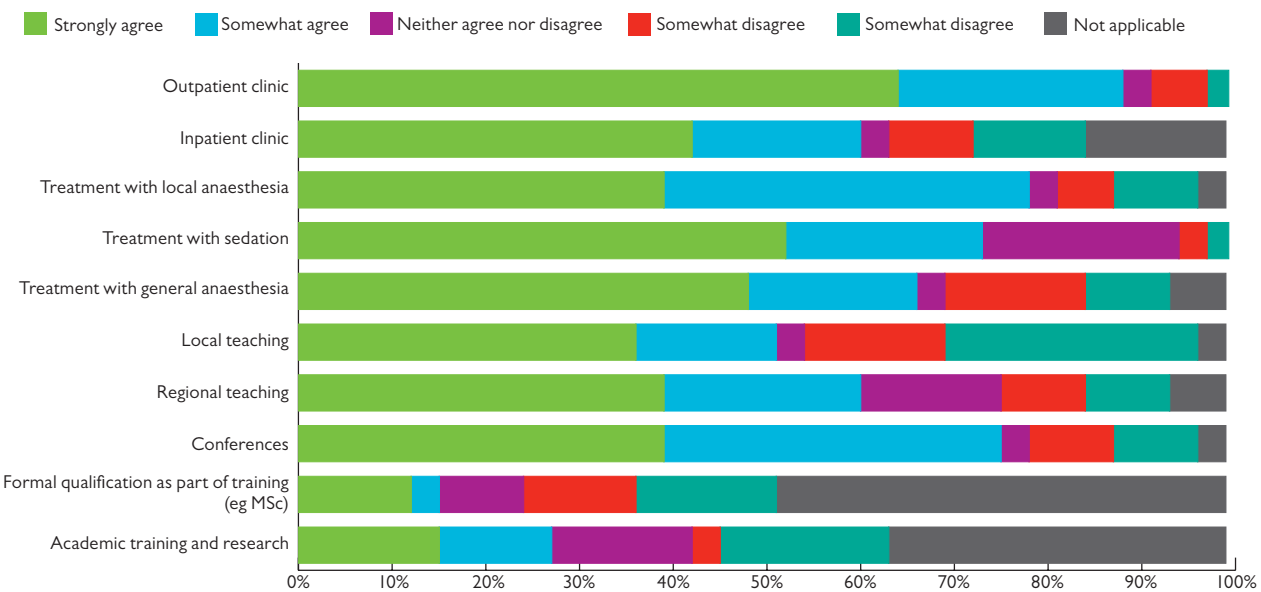
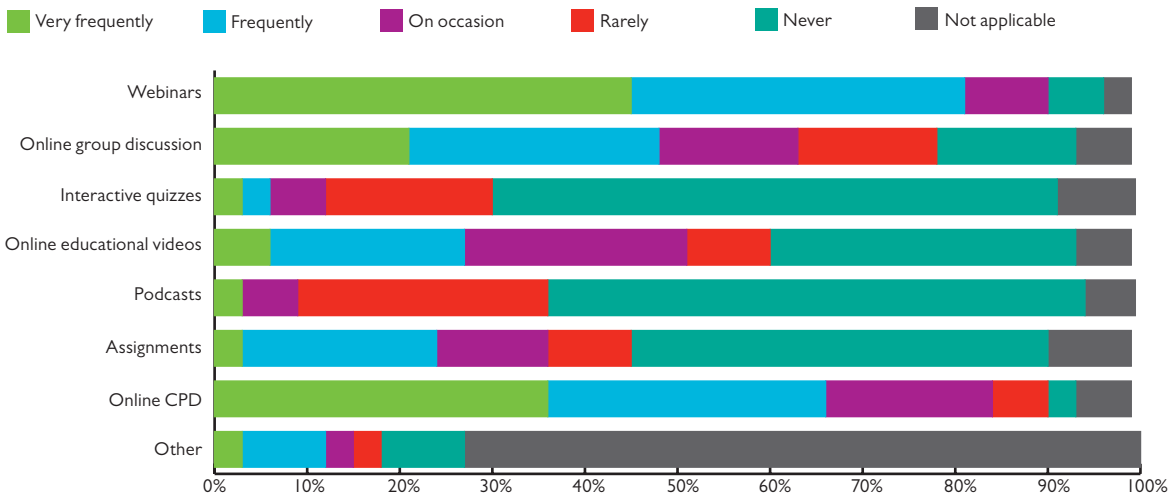


Figure 3 Reported frequency of utilisation of methods and resources of training delivery during the COVID-19 pandemic



Wales and 5 in Scotland. A quarter (25%, *n*=14) were academic trainees and over three-quarters (79%, *n*=45) were at pre-CCST level.

One author (JH) was a member of the trainees' group at the time of survey dissemination and so was ineligible to complete the survey. Of 56 eligible invited participants, 41 commenced the survey. Of these respondents, 35 completed the survey, giving a response rate of 62.5%. Two respondents were out of programme and were excluded from analysis.

Respondents were at diverse stages of specialty training with 76% (*n*=25) at pre-CCST level (Table 2). The vast majority of respondents (94%, *n*=31) were trainees in England, with one based in Scotland and one in Wales. A quarter (24%, *n*=8) were academic trainees.

The clinical training environment was diverse with most respondents (73%, *n*=24) training in more than one clinical environment. Ninety per cent of trainees (*n*=30) spent part of their clinical time in a dental hospital. Furthermore, 67% (*n*=22) spent time in a children's hospital and 39% (*n*=13) in community dental services. Three-quarters (73%, *n*=24) were training in more than one clinical environment.

The majority of respondents (85%, *n*=28) were not redeployed away from paediatric dentistry during the COVID-19 pandemic. Areas for redeployment included urgent dental care services, emergency department settings, district nursing and COVID-19 testing services. The length of time of redeployment varied from less than 4 weeks to more than 12 weeks at the time of survey completion (Table 3). The degree of disruption in each pre-specified aspect of specialty training varied (Figure 2).

Regarding clinical activity, outpatient clinic activity was disrupted for 88% of trainees (*n*=29) and treatment with local anaesthesia for 79% (*n*=26). General anaesthesia treatment was disrupted for fewer trainees (67%, *n*=22). When asked about education, attendance at conferences was most affected and local teaching was least affected, these being disrupted for 76% (*n*=25) and 52% (*n*=17) respectively. Academic components of training appeared to be less disrupted than clinical training and delivery of teaching, with 15% (*n*=5) reporting a disruption to a formal qualification and 27% (*n*=9) to their academic training. However, 49% (*n*=16) and 36% (*n*=12) reported these aspects to be not applicable to their training. Diverse teaching methods and resources were employed during training delivery (Figure 3).

Webinars and online continuing professional development were reported to be the most popular teaching methods, being utilised very frequently or frequently by 82% (*n*=27) and 67% (*n*=22) of trainees respectively. Respondents who stated 'other' regarding methods and resources utilised mentioned online case-based discussion as well as ongoing postgraduate qualification teaching and dissertations.

Participants were asked to identify both effective and ineffective teaching methods and resources, whether they had gained any skills or opportunities and what their final thoughts were regarding the impact of COVID-19 on their training. Three key interlinking themes were identified, all of which were perceived either optimistically or pessimistically by trainees.

Personality and personal circumstance

While the majority of respondents displayed adaptiveness and resilience, and sought out opportunities during the pandemic, some respondents felt that the pandemic had not brought any positive aspects to their training. Individual personal circumstance also affected experiences, with one

pregnant respondent having experienced a more significant impact on their training.

'Opportunity to have to think outside the box slightly and come up with innovative ways of working [...] within COVID restrictions'

'Working in an ever changing environment, making me more prepared for urgent changes'

'Less access to treatment sessions, currently pregnant and non-AGPs [aerosol generating procedures] only'

For some, work–life balance had improved during the pandemic with access to training through telecommunication. For others, telecommunication was identified as a negative influence on balance, with meetings often occurring outside working hours.

'Webinars and "virtual seminars" have been easy to access [...] arranged at times to suit everyone [...]. Most of the times [...] outside my working hours though'

'Being able to access meetings/online teaching etc has made training infinitely easier for me as I don't need to access childcare [...] opened huge opportunities to participate in training and I hope these [...] remain'

Colleagues and workplace
Individual units fared differently regarding teaching, teamworking, communication and organisation. Many respondents identified that the pandemic had resulted in better team cohesion and communication, and had improved their management and leadership skills.

'Management skills – timetable development, working via teledentistry and making decisions on the phone, protocol and standard operating procedure development, organisation of general anaesthesia lists'

'It has identified the importance of good management and how poor communication can negatively affect the whole team'

Variation in the level of virtual teaching provision was reported. Many trainees felt that their units had responded well to virtual teaching while others felt that their unit had not provided adequate teaching and training opportunities.

'I feel my training has not been too affected [...] but this was through self-directed learning'

'I feel we have access to more teaching than we would normally have as it can be provided virtually'

'[...] time could have been utilised better with regard to additional didactic teaching, especially when we have not been seeing as many patients'

Changes to clinical and academic activities
Trainees identified both challenges and opportunities in relation to their training. Many respondents reported a change in their clinical activity, with

Table 2 Training grade of respondents

Training grade	*n*
ST1	9 (27%)
ST2	7 (21%)
ST3	9 (27%)
ST4	3 (9%)
ST5	5 (15%)

Table 3 Length of redeployment for residents who were redeployed

Length of redeployment	*n*
0-4 weeks	1 (20%)
5-8 weeks	1 (20%)
9-12 weeks	1 (20%)
>12 weeks	2 (40%)

provision of more emergency dental treatment Additionally, responses supported quantitative findings that treatment with local anaesthesia and sedation was affected more than treatment with general anaesthesia. However, some trainees viewed this as an opportunity whereas others viewed this as having a negative impact on their training.

'More exposure to emergency dental treatment (eg dental trauma and acute facial swelling)'

'Negatively affected training – just see emergency pain/swelling in a service provision role'

'[...] lost experience for treatment under local anaesthesia/ intravenous sedation but general anaesthesia experience is still ok'

Many respondents referred to an increase in time available to complete research and quality improvement projects or progress with their academic training.

'Able to progress further with research project than would otherwise have been able to in non-clinical sessions'

Some respondents referred specifically to extension of their training and delay to specialty examinations.

'Negatively impacted as training now extended and several clinics [...] likely to be unavailable for some time'

'Professional exams cancelled, which has led to an extension of training. No/little consideration of the psychological impact of 6 months of studying and then having exam cancelled.'

Discussion

This is the first published survey exploring the impact of the COVID-19 pandemic on paediatric dentistry trainees. It contributes to the international picture

of the impact of COVID-19 on specialty training. The findings have good generalisability with a completion rate of 62.5%. However, it is acknowledged that 37.5% of the eligible population failed to complete the survey. Multiple bodies were disseminating surveys at this time and an element of survey fatigue may have occurred.

The demographic of our respondents was in line with those in specialty training, including training grade and the proportion of academic trainees. Nevertheless, with only one respondent from Scotland and one from Wales, it is not possible to generalise these responses to represent all trainees in these regions. A fine balance existed in survey design between identifying geographical impact on trainee experience and retaining anonymity; the smaller the locality specified, the more identifiable trainees were likely to be, which may have increased the risk of response bias.

In medicine, the General Medical Council national training survey for 2020 found that three-quarters of trainees experienced training disruption during the pandemic, with change in clinical workload varying between specialties.[19] Further research in individual medical specialties has explored specific barriers such as personal protective equipment (PPE) shortages, quarantining and redeployment to another clinical area.[15–17] Our survey aimed to explore trainee experience and reported barriers through open questioning and free text responses. On reflection, however, it may have been of benefit to include exploration of specific training barriers such as PPE provision.

This survey presents quantitative and qualitative evidence that trainees felt less disruption in their academic training than in their clinical training, with some reporting that more time was available to further their academic research and quality improvement projects. This finding is in agreement with existing anecdotal evidence in dentistry and survey findings in medicine.[8,14] In addition, trainees identified alternative opportunities and skills that could be gained during the pandemic. This included management, leadership, protocol development, communication through a variety of means, and improved use of teledentistry and distance learning.

Our qualitative analysis highlighted that the personality and personal circumstance of individual trainees affected their overall outlook, with some trainees readily identifying opportunities and skills they would not have otherwise gained, and others reporting only training disruption. This is particularly notable regarding work–life balance, with webinars frequently taking place out of hours. While some trainees found the increased accessibility through teleconferencing to be invaluable in eliminating barriers such as childcare, others saw this as an encroachment on their work–life balance. Despite this, the majority of respondents reported webinars to be utilised very frequently or frequently in their training delivery and many stated in free text responses that they found webinars a useful learning resource. This provides evidence of webinar acceptability among postgraduate dental trainees, and that this should be considered a useful and accessible resource beyond the pandemic.

The results of this survey support the commentary of oral medicine trainees who reported anecdotal evidence of suspension of conferences and face-to-face teaching.[8] Conferences and face-to-face teaching may provide opportunities for trainees beyond direct education, such as networking, collaboration and opportunities to chair sessions or present their work. These opportunities contribute to holistic development in specialty training and may not be easily replicated online. On the other hand, previous reviews have considered that trainees may have found conferences inaccessible prior to the pandemic owing to staffing at their institution or cost of travel.[21] The qualitative findings of this survey support this, with trainees reporting improved accessibility of remote learning. Furthermore, the responses suggest that this extends beyond travel and staffing to a childcare and work–life balance perspective. Indeed, one respondent stated that they hoped this improved accessibility to training would continue after the pandemic. Consideration should be given to making both online and face-to-face learning opportunities available at future educational events.

A survey exploring the experiences of dentists following resumption of dental services in June 2020 found that although 60% had resumed routine procedures including aerosol generating procedures, the number of patients being seen had reduced for

Trainees felt less disruption in their academic training than in their clinical training

39% of respondents.[20] The aim of our research was to explore the experiences of paediatric dental trainees during the first phase of the pandemic but it is likely that trainees will have experienced similar barriers on resumption of dental services and training. Further survey research could be utilised to explore trainee experiences during the phased return of routine dentistry as well as longer-term impacts on training. There is also scope to include trainees from other dental specialties to explore variation in experience between specialties in order to improve generalisability.

Conclusions

Specialty trainees in paediatric dentistry in the UK have experienced disruption to varying degrees across their clinics, treatment provision, teaching and training. Distance learning methods such as webinars have been widely employed and have been well accepted. Our survey has shown that trainees have different perceptions of the impact of COVID-19 on their training with regard to personal circumstance, colleagues and workplace, and change in clinical and academic activity, ranging from overall optimistic to pessimistic. These findings can inform provision of postgraduate dental training in the future by identifying barriers to delivery of each aspect of teaching and training. Additionally, it highlights opportunities that can be sought by trainees to further their holistic development.

Acknowledgements

The authors would like to thank the British Society of Paediatric Dentistry trainees' group and their secretary, Lucy Ridsdale, for their help in disseminating this survey.

References

1. Quinn B, Field J, Gorter R *et al.* COVID-19: the immediate response of European academic dental institutions and future implications for dental education. *Eur J Dent Educ* 2020; **24**: 811–814.
2. Goldstein LB, Trombly R, McLeod D *et al.* Dental education in the time of COVID-19 and beyond. *Compend Contin Educ Dent* 2021; **42**: 47–48.
3. Liu Y, Ning Z, Chen Y *et al.* Aerodynamic analysis of SARS-CoV-2 in two Wuhan hospitals. *Nature* 2020; **582**: 557–560.
4. Carter E, Currie CC, Asuni A *et al.* The first six weeks – setting up a UK urgent dental care centre during the COVID-19 pandemic. *Br Dent J* 2020; **228**: 842–848.
5. Faculty of General Dental Practice (UK). COVID-19: routine dental care ends throughout the UK. https://www.fgdp.org.uk/news/covid-19-routine-dental-care-ends-throughout-uk (cited June 2021).
6. NHS England. Issue 6, preparedness letter for primary dental care – 28 August 2020. https://www.england.nhs.uk/coronavirus/publication/preparedness-letters-for-dental-care (cited June 2021).
7. British Medical Association. PPE: a problem yet to be fixed. https://www.bma.org.uk/news-and-opinion/ppe-a-problem-yet-to-be-fixed (cited June 2021).
8. Mahendran K, Yogarajah S, Herbert C *et al.* COVID-19 and postgraduate dental training – a commentary. *Eur J Dent Educ* 2021; **25**: 415–419.
9. GOV.UK. UK summary. https://coronavirus.data.gov.uk/ (cited June 2021).
10. Patel M, Menhadji P, Mayor S. Redeployment of dental core trainees in the United Kingdom due to coronavirus disease 2019. *Eur J Dent* 2020; **14(Suppl 1)**: S44–S49.
11. General Dental Council. Joint statement on arrangements for dental and dental care professional students and recent graduates, while restrictions are in place to control the spread of COVID-19. https://www.gdc-uk.org/news-blogs/news/detail/2020/03/23/arrangements-for-dental-and-dental-care-professional-students-and-recent-graduates-to-control-the-spread-of-covid-19 (cited June 2021).
12. Health Education England. Supporting the COVID-19 response: enabling progression at ARCP. https://www.hee.nhs.uk/sites/default/files/documents/Enabling%20Progression%20at%20ARCP%20-%2020-04-20.pdf (cited June 2021).
13. Royal College of Surgeons of England. An update regarding the Intercollegiate Specialty Fellowship Examinations. https://www.rcseng.ac.uk/-/media/files/rcs/fds/guidelines/jmdf-isfe-update.pdf (cited June 2021).
14. Seifman MA, Fuzzard SK, To H, Nestel D. COVID-19 impact on junior doctor education and training: a scoping review. *Postgrad Med J* 2021 Mar 9. *[Epub ahead of print.]*
15. Pawlak KM, Kral J, Khan R *et al.* Impact of COVID-19 on endoscopy trainees: an international survey. *Gastrointest Endosc* 2020; **92**: 925–935.
16. Siau K, Iacucci M, Dunckley P, Penman I. The Impact of COVID-19 on gastrointestinal endoscopy training in the United Kingdom. *Gastroenterology* 2020; **159**: 1582–1585.e3.
17. Bitonti G, Palumbo AR, Gallo C *et al.* Being an obstetrics and gynaecology resident during the COVID-19: impact of the pandemic on the residency training program. *Eur J Obstet Gynecol Reprod Biol* 2020; **253**: 48–51.
18. Caruana EJ, Patel A, Kendall S, Rathinam S. Impact of coronavirus 2019 (COVID-19) on training and well-being in subspecialty surgery: a national survey of cardiothoracic trainees in the United Kingdom. *J Thorac Cardiovasc Surg* 2020; **160**: 980–987.
19. General Medical Council. *National Training Survey 2020: Summary of Results.* London: GMC; 2020.
20. Faculty of Dental Surgery. *A Resumption of Dental Services?* London: RCS England; 2020.
21. Saeed SG, Bain J, Khoo E, Siqueira WL. COVID-19: finding silver linings for dental education. *J Dent Educ* 2020; **84**: 1060–1063.