

Educational concerns and anxiety levels amongst ophthalmology trainees during the COVID-19 pandemic

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How concerned are ophthalmology trainees about the present impact and the future consequences of suspended ophthalmic training programmes? Researchers in the West of Scotland investigate.

Anxiety, stress and the longer-term stress reaction of burnout often go unrecognised, yet are known to affect resident physicians and surgeons, including ophthalmologists [1,2]. Burnout leads to a reduced sense of personal accomplishment, mental and physical fatigue, feelings of detachment and poor work satisfaction [3,4]. These feelings can all be influenced by changing life circumstances and unrealistic workloads, which have already been reported in academic ophthalmology [2]. The recent COVID-19 pandemic has stopped all elective ophthalmology work in the UK since mid-March 2020. Suspended ophthalmology training programmes have led to the redeployment of ophthalmic trainees in Scotland to assist on acute medical wards. Trainees may be anxious about managing acutely unwell medical patients outside their normal scope of practice, particularly

senior trainees who have not performed these duties for five to six years [5-7]. Junior trainees are worried about becoming deskilled during this enforced absence [8]. This concern seems particularly related to maintaining surgical competence and loss of regular ophthalmic education [8,9]. All ophthalmology conferences have also been postponed or cancelled, removing opportunities to present completed projects (and reducing the incentive to persist with research, as patient recruitment has mostly been suspended).

Snapshot surveys in ophthalmology departments are useful to identify trainees' surgical experiences and their related confidence (for example, in the management of posterior capsule rupture or surgical adjunct use) [10-13]. We adapted the principles of these 'confidence' based surveys into a 'concerns' based survey, to identify ophthalmic trainees' concerns

and anxieties in the current uncertain training situation. The aim of this research was to identify these concerns in order to provide guidance for the development of relevant and appropriate support and education for ophthalmic trainees during redeployment and beyond.

Methods

An anonymised electronic SurveyMonkey questionnaire was distributed via email in mid-April 2020 to all ophthalmology specialty registrar trainees (ST years 1-7) within the West of Scotland Deanery. Survey completion was voluntary and non-incentivised. Only one response per trainee was permitted (Table 1, available via link below).

The survey was divided into three main sections: Demographics to ascertain trainee experience level, specific questions based around educational concerns relevant to

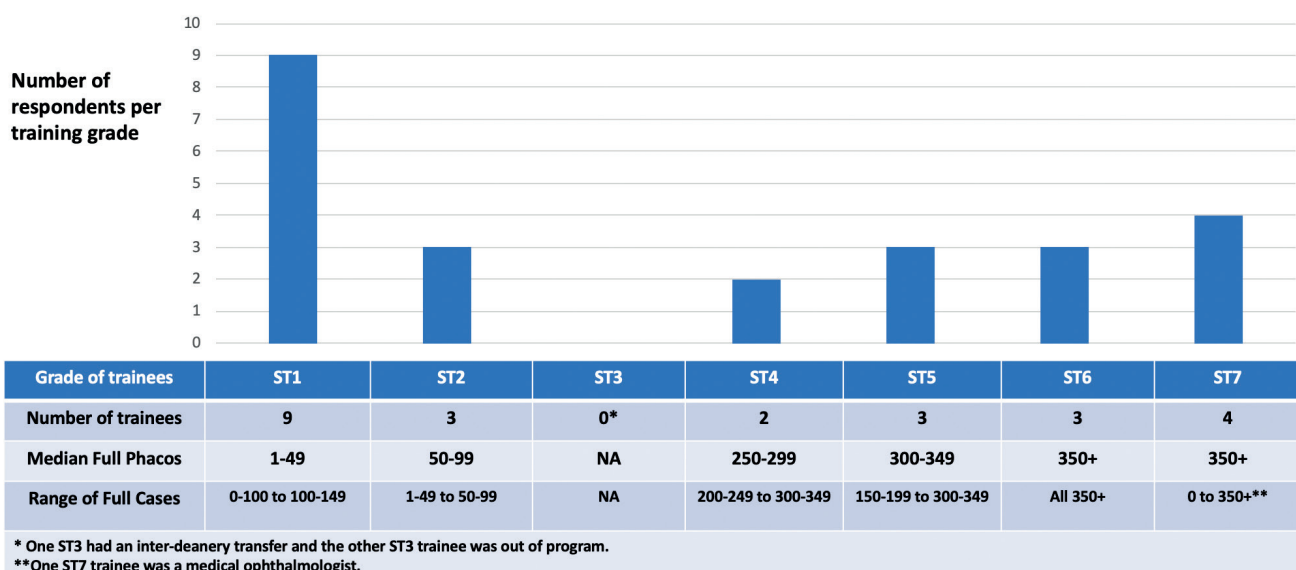


Figure 1: Figure of demographics, showing training grade and experience of respondents.

'Deskilling', and specific questions relevant to 'Delays to education / achievements'. Trainees were asked to identify their current level of concern on the following scale as used in previously published confidence / competence surveys: 'Not concerned at all', 'Mildly concerned', 'Quite concerned', or 'Very concerned'. Answers scored 0, 1, 2 or 3 points respectively. These scores were added up for each question to rank subjects of greatest concern.

An additional final section involved completing a validated self-reporting anxiety questionnaire (ASQ) to quantify trainee anxiety levels for their own personal benefit [14]. We wished to use these results to gauge interpretation of the subjective educational factor responses. The ASQ involved 17 questions ascertaining the

respondent's experience regarding the intensity and frequency of certain anxiety-related symptoms in the past week on a linear scale.

Results

Demographics of respondents

There were 24 responses within one week (response rate 73%; 24/33), from 12 males and 12 females. There was a reasonable spread of trainee experience and seniority, with a slightly greater number of ST1 trainees (due to the addition of Locum Appointment for Training (LAT) trainees) (Figure 1).

Six trainees had previously experienced prolonged absences greater than three months from ophthalmic training (mainly

maternity leave). Sixteen (66.7%) trainees had been preparing to sit RCophth examinations prior to the suspension of training (five studying for FRCophth part 1, six for refraction certificate, two for FRCophth part 2 oral, and three for FRCophth part 2 OSCE).

Concerns regarding ophthalmic deskilling

The greatest concern was linked to deskilling in cataract surgery (96%; 22/23), with 65% (15/23) either 'very' or 'quite concerned' (n=23 as ST7 medical ophthalmologist's response excluded). The 22% (5/23) who were 'very concerned' included two ST1s, two ST2s and one ST7. The second greatest concern was linked to deskilling in acute / on-call ophthalmology (83%; 20/24),

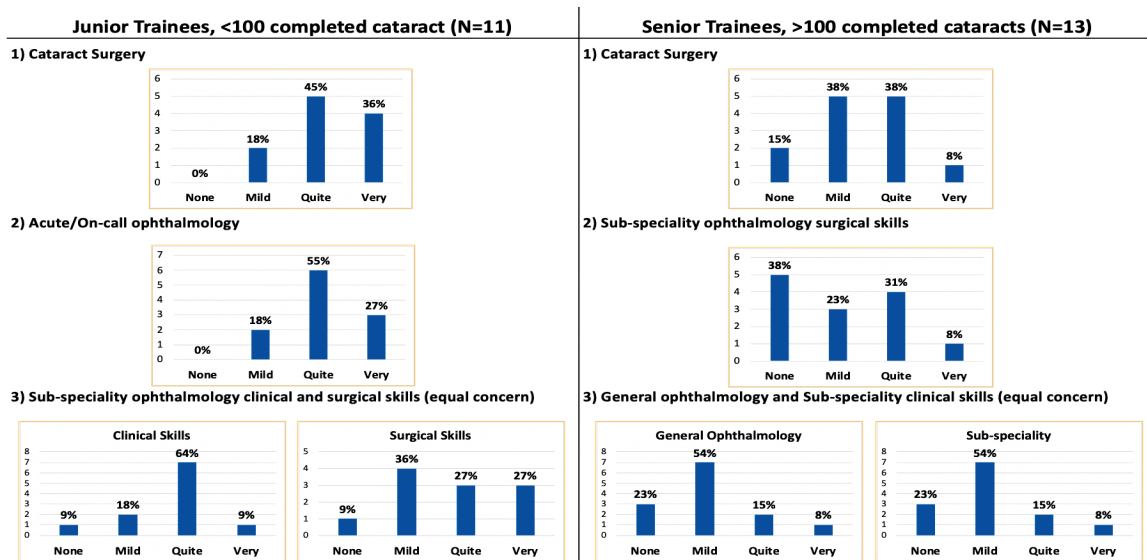


Figure 2: Figure of responses for top three areas of concern regarding 'deskilling' between junior and senior ophthalmic trainees, including breakdown of answers.

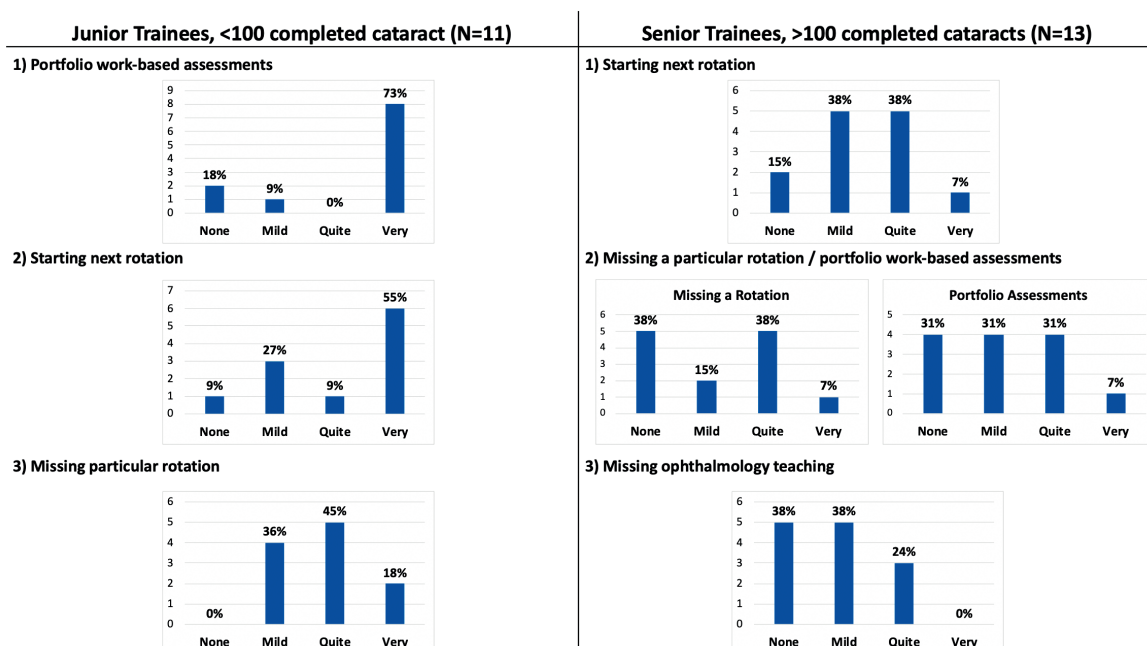


Figure 3: Figure of responses for top three areas of concern regarding 'delays' between junior and senior ophthalmic trainees, including breakdown of answers.

with 21% (5/24) 'very', 38% (9/24) 'mildly' and 25% (6/24) 'quite concerned'. The third greatest deskilling concern related to subspecialties, with 46% (11/24) 'very' or 'quite concerned' about deskilling in subspecialty clinical skills, and 48% (11/23) were 'very' or 'quite concerned' about deskilling in subspecialty surgical skills. See Figure 2 for deskilling concern breakdown between junior and senior trainees.

Concerns regarding delays to ophthalmic education / achievements

The greatest concern related to potential delays with starting next ophthalmology rotation (88%; 21/24). Of the seven (29%) 'very concerned', three were ST1, three were ST2 and one was ST7. The second greatest concern involved delays in completing work-based assessments. Of the nine (38%) 'very concerned', eight were ST1 or ST2. The third greatest 'delay' concern was with potentially missing out on a specific training rotation (79%; 19/24), with 54% (13/24) being 'quite' or 'very concerned'. See Figure 3 for delay concerns breakdown between junior and senior trainees.

Additionally, 63% (15/24) were concerned about feelings of isolation in redeployment and 71% (17/24) were concerned with missing regular regional ophthalmology teaching sessions.

Other notable concerns included: 25% (6/24) were either 'quite' or 'very concerned' about delays to post-graduate examinations. Three ST7 trainees (13%; 3/24) were 'very concerned' about delays to going out of programme / starting overseas fellowships. Twelve trainees (50%; 12/24) reported 'mild' concern with delays in research or presenting at conferences, with 33% (8/24) 'mildly' or 'quite concerned' about financial implications due to cancelled conferences / exams. Eight trainees expressed additional concerns which mainly centred on personal and family health concerns from being on COVID-19 wards in the free text section.

Suggested solutions to educational concerns

The top three most popular solutions that trainees wished to be provided by the ophthalmology department to address these concerns were: 92% (22/24) regular alternative (online) programme of teaching; 67% (16/24) regular contact through emails; and 63% (15/24) extra simulated surgery sessions. The top three personal solutions to address these educational concerns included: 92% (22/24) increased self-directed learning; 67% (16/24) engaging with regular alternative (online) teaching; and arranging contact / meetings with educational supervisors together with

regular departmental contact through emails (both 50%). Only one trainee had made additional use of the surgical simulation facilities. Hope was expressed for an advisory statement from the Royal College of Ophthalmologists regarding external fellowships in relation to travel restrictions.

Results from Anxiety Symptom Questionnaire (ASQ)

The median total ASQ score was 56/340 (range 0 to 170) reflecting mild to moderate background anxiety. The median score was 27/170 (range 0 to 81) for Anxiety Intensity, and 30/170 (range 0 to 96) for Anxiety Frequency. From the 17 ASQ questions, the most common symptoms were 'anxiety' and 'worrying' with median intensity scores of 3 (range 0-8) for each. The most frequent symptom was 'anxiety'; median frequency score was 3 (1-10). With regards to most commonly reported mild, moderate, and severe / extreme symptoms, 75% (18/24) trainees had mild 'nervousness', 33% (8/24) moderate 'worrying' and 17% (4/24) severe / extreme 'anxiety' and 'anticipating or fearing something bad might happen'. See Table 2 (available via link below) for breakdown of answers from the ASQ questionnaire.

There was no difference in ASQ scores between junior trainees (completed <100 cataracts) and seniors (Student T-Test: $p=0.57$), trainees who had previously been on extended leave from ophthalmology versus those who had not ($p=0.72$), trainees having exams suspended versus those already completed exams / not sitting them ($p=0.85$), and males compared to females ($p=0.23$).

Discussion

Our study surveyed educational concerns and anxiety levels of trainee ophthalmologists during medical redeployment during the COVID-19 pandemic. We believe our results to be representative and balanced, as the ASQ questionnaire in our survey demonstrated mainly mild background anxiety levels, although 17% (4/24) trainees reported experiencing episodes of severe / extreme anxiety in the past week. Anxiety levels (ASQ scores) were similar for all trainees, regardless of experience, gender or impending examinations.

Concerns about separation from the normal working environment have been expressed in publications examining the impact of pregnancy or parental leave in obstetrics and gynaecology residents in the US [15]. Their survey highlighted perceived and actual issues due to time away from training schemes. These included a perceived negative impact on training,

the actual burden of covering colleagues without compensation (financial or time back), decreased resident well-being and performance, all due to competing personal priorities. These challenges were amplified by conflicting departmental policies. The findings demonstrate that when trainees experience changing work-life situations, uncertainty about their future training and return to work makes these concerns worse [16,17]. There have also been several recent US publications investigating resident wellness in ophthalmology from both the program directors' and residents' perspectives [18,19]. They identified significant rates of burnout and depression, and recommended scheduling dedicated time for residents to attend wellness-related educational sessions. These US-based studies were conducted in more 'normal' times. In the present climate of global COVID-19 pandemic, redeployment and suspended ophthalmic training programmes, it follows that we should be studying the wellness of trainees even more closely, and that was the incentive to performing this research.

The biggest areas of concern for our trainees involved potentially becoming deskilled in cataract surgery and having significant delays to starting the next ophthalmology rotation. It was notable that all trainees expressed elements of anxiety and concern with deskilling and delays to training. Juniors reported greater concern for de-skilling in acute / on-call ophthalmology, and more concern with delays to completing portfolio work-based assessments. However, this survey was distributed before the Royal College of Ophthalmologists released their statement on adjusted portfolio requirements for the end of year assessment reviews [20]. Although there were divisions in greatest concern issues between the junior and seniors (presumed related to their stage of training), these issues were not exclusive. For example, some ST5 and ST7 trainees were also 'very concerned' about deskilling in acute / on-call ophthalmology. Senior trainees were more concerned about deskilling in subspecialty surgical skills; at the time of the COVID-19 redeployment, some final year trainees were completing training selected components in their subspecialty fields. Senior trainees were also concerned about a delayed start to their next rotation, as this might be their last opportunity to gain specific subspecialty experience.

We do not know how or when redeployed trainees will return to ophthalmology services, and in what state. Occult acute stress reaction (ASR) and post-traumatic stress disorder (PTSD) are often unrecognised in healthcare professionals

following exposure to seriously ill patients, and research suggested that it is higher amongst surgical trainees than in the general population [21]. This is particularly relevant to ophthalmologists managing acutely unwell medical patients outside their normal scope of practice. We identified a mild to moderate anxiety level amongst our trainees in their current deployment. Stress and anxiety are known to negatively affect performance, as demonstrated by a surgical educational study which showed a critical and negative mentoring style could be detrimental to trainees' surgical skill acquisition [22]. Anxiety and stress have also been shown to contribute to incomplete surgical skill transfer despite proficiency-based simulation training [23]. Exposure to resilience training has been proposed as a solution to reduce stress and burnout rates, as stress management education can enhance technical performance and decision-making during surgical simulation [24,25].

As part of our study we asked trainees how they would like the ophthalmology department to address their concerns. Most popular solutions were alternative (online) regular programme of teaching, regular contact through emails, and simulated sessions. In the West of Scotland programme, weekly evening video conference teaching sessions have been arranged to keep trainees engaged with ophthalmology. Additionally, trainees have been encouraged to utilise the dry lab resources and the simulator facility (with adequate social distancing and cleaning). Although most of the trainees now have medical consultants as clinical supervisors, these findings highlight the importance of ophthalmology supervisors keeping in touch with their trainees and offering support and guidance. Regular contact with mentors should help reduce concerns about isolation, reported by 63% (15/24) of our respondents, as these feelings were experienced despite the provision of the weekly online teaching sessions.

Only one of our trainees reported having used the simulation facilities during redeployment. While this may reflect trainee availability rather than interest, it may be necessary for protected simulation time to be built into ophthalmic trainee timetables.

Other methods of support to manage stress have been suggested in the literature. Believing surgery to be a form of performing art, a recent study investigated whether the experience of how expert musicians' practice and perform could be applied to surgical training [26]. Of relevance to the issues raised in our study, they identified not immediately returning to public performing after a hiatus from practice, but rather

focusing on rehearsal through nondominant hand training and motor performance to be essential to ensure high quality outcomes prior to returning to normal (high-stress, high-risk) work environments. Applying these studies to the present situation suggests time spent on surgical simulators and in dry labs reinforcing previously acquired surgical skills will assist re-integration into training. This is corroborated by trainee preferences highlighted in our survey. This structure would re-establish trainee and trainer confidence in surgical and clinical competency, protecting both trainees and patients [27]. There will be increased anxiety levels among patients who have experienced COVID-related delays to their ophthalmic care, and so may be less willing to permit trainees to be actively involved in their surgeries, with obvious consequences for surgical education [28,29]. Strategies to assist with operating on patients who experience heightened anxiety have recently been described in a survey of glaucoma surgeons undertaking 'only-eye' surgeries [30]. Their recommendations included developing an awareness of both patient and surgeon centred issues, including risk management, appropriate training, developing the correct psychology and mentoring support. These themes are consistent with the concerns identified in our survey.

Limitations

Surveys are notorious for poor uptake and may not cover all aspects of the subject being investigated. In our study, we had a good response rate (73% in one week) despite the respondents being redeployed to medical wards (including night shift rotas), and some of them being on sick leave / self-isolation. The value of questionnaires also can be criticised for being non-validated. To address this, we used the validated ASQ and adapted previous published surveys of ophthalmic confidence to ensure the validity of our questions [12-14].

Proposal for future work

It should be noted that lessons learned from studies of planned maternal leave are not directly applicable to the anticipated impact from the suspension of educational programs due to a worldwide COVID-19 pandemic. We do not know what support will be required to re-establish training systems while dealing with the backlog of postponed clinical needs [9,31]. Wider use of educational tools such as surgical simulation, web-based learning and repeating competency tests may help with resident development and education [17]. In light of this uncertainty, the best way to identify concerns is to ask the trainees

involved. We performed this survey to guide our planning to address the educational needs of our trainees. We believe that other departments could use this tool for their own trainees. We recommend they include the anxiety questionnaire so trainees can monitor their anxiety levels and concerns as they re-adapt to the reorganised ophthalmic workplaces due to COVID-19 restrictions and beyond [32,33].

Conclusion

Our survey identifies trainees' anxieties and educational concerns about the present impact and the future consequences of suspended ophthalmic training programmes due to COVID-19. We suggest other ophthalmic departments, deaneries or colleges perform similar surveys to identify the actual needs of their trainees, rather than simply re-establishing the old order of training despite changing working practices [31-33]. These findings should guide other NHS trusts and deaneries to implement relevant appropriate measures of support and education to trainees during current redeployment and when they return to the new normality of ophthalmology training.

References

1. Wong AMF. Beyond burnout: looking deeply into physician distress. *Can J Ophthalmol* 2020 Mar 20 [Epub ahead of print].
2. Cruz OA, Pole CJ, Thomas SM. Burnout in chairs of academic departments of ophthalmology. *Ophthalmology* 2007;**114**(12):2350-5.
3. Maslach C, Leiter MP. Understanding the burnout experience: Recent research and its implications for psychiatry. *World Psychiatry* 2016;**15**:103-11.
4. Linzer M, Visser MR, Oort FJ, et al. Predicting and preventing physician burnout: Results from the United States and the Netherlands. *Am J Med* 2001;**111**:170-5.
5. Rakowsky S, Flashner BM, Doolin J, et al. Five Questions for Residency Leadership in the Time of COVID-19: Reflections of Chief Medical Residents From an Internal Medicine Program. *Acad Med* 2020 Apr 13 [Epub ahead of print].
6. Attz MS, Lakhani BK. Redeployment: a new paradigm for ophthalmology professionals. *Eye* 2020 Apr 28 [Epub ahead of print].
7. Li KZ, Yong VKY, Lee LKM, et al. When ophthalmologists step up to the COVID-19 frontlines. *Eye* 2020 Apr 28 [Epub ahead of print].
8. Porpiglia F, Checucci E, Amparore D, et al; European Society of Residents in Urology (ESRU) of European Association of Urology (EAU). Slowdown of urology residents' learning curve during COVID-19 emergency. *BJU Int* 2020 Apr 9 [Epub ahead of print].
9. Theoret C, Ming X. Our Education, Our Concerns: Medical Student Education Impact due to COVID-19. *Med Educ* 2020 Apr 20 [Epub ahead of print].
10. Mulholland C, Lockington D. Trainee experience with capsular tension rings in Scotland-the need for structured simulation exposure to surgical adjuncts. *Eye (Lond)*. 2020 Apr 7 [Epub ahead of print].

11. Nairn J, Benjamin L, Lockington D. Comment on: 'Ophthalmology Specialist Trainee Survey in the United Kingdom'. The need to increase familiarity with the management of predictable cataract surgery complications via simulation-ensuring competence to improve confidence. *Eye (Lond)* 2019 Nov 21 [Epub ahead of print].
12. Turnbull AM, Lash SC. Confidence of ophthalmology specialist trainees in the management of posterior capsule rupture and vitreous loss. *Eye (Lond)* 2016;**30**(7):943-8.
13. Dean WH, Grant S, McHugh J, et al. Ophthalmology specialist trainee survey in the United Kingdom. *Eye* 2019;**33**:917-24.
14. Baker A, Simon N, Keshaviah A, et al. Anxiety Symptoms Questionnaire (ASQ): development and validation. *Gen Psychiatr* 2019;**32**(6):e100144.
15. Hariton E, Matthews B, Burns A, et al. Pregnancy and parental leave among obstetrics and gynecology residents: results of a nationwide survey of program directors. *Am J Obstet Gynecol* 2018;**219**(2):199.e1-199.e8.
16. Weiss J, Teuscher D. What Provisions Do Orthopaedic Programs Make for Maternity, Paternity, and Adoption Leave? *Clin Orthop Relat Res* 2016;**474**(9):1945-9.
17. Kogan M, Klein SE, Hannon CP, Nolte MT. Orthopaedic Education During the COVID-19 Pandemic. *J Am Acad Orthop Surg* 2020 Apr 8 [Epub ahead of print].
18. Tran EM, Scott IU, Clark MA, Greenberg PB. Assessing and Promoting the Wellness of United States Ophthalmology Residents: A Survey of Program Directors. *J Surg Educ* 2018;**75**(1):95-103.
19. Tran EM, Scott IU, Clark MA, Greenberg PB. Resident Wellness in US Ophthalmic Graduate Medical Education: The Resident Perspective. *JAMA Ophthalmol* 2018;**136**(6):695-701.
20. COVID-19 clinical guidance for ophthalmologists. Royal College of Ophthalmologists: <https://www.rcophth.ac.uk/2020/04/covid-19-update-and-resources-for-ophthalmologists/> Last accessed May 2020.
21. Thompson CV, Naumann DN, Fellows JL, et al. Post-traumatic stress disorder amongst surgical trainees: An unrecognised risk? *Surgeon* 2017;**15**(3):123-30.
22. Flinn JT, Miller A, Pyatka N, et al. The effect of stress on learning in surgical skill acquisition. *Med Teach* 2016;**38**(9):897-903.
23. Prabhu A, Smith W, Yurko Y, et al. Increased stress levels may explain the incomplete transfer of simulator-acquired skill to the operating room. *Surgery* 2010;**147**(5):640-5.
24. Goldberg MB, Mazzei M, Maher Z, et al. Optimizing performance through stress training - An educational strategy for surgical residents. *Am J Surg* 2018;**216**(3):618-23.
25. Goldhagen BE, Kingsolver K, Stinnett SS, Rosdahl JA. Stress and burnout in residents: impact of mindfulness-based resilience training. *Adv Med Educ Pract* 2015;**6**:525-32.
26. Rui M, Lee JE, Vauthey JN, Conrad C. Enhancing surgical performance by adopting expert musicians' practice and performance strategies. *Surgery* 2018;**163**(4):894-900.
27. Srinivasa S, Gurney J, Koea J. Potential Consequences of Patient Complications for Surgeon Well-being: A Systematic Review. *JAMA Surg* 2019;**154**(5):451-7.
28. Nguyen TN, Silver D, Arthurs B. Consent to cataract surgery performed by residents. *Can J Ophthalmol* 2005;**40**(1):34-7.
29. Brooks SK, Webster RK, Smith LE, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. *Lancet* 2020;**395**(10227):912-20.
30. Jones L, Taylor DJ, Sii F, et al. The Only Eye Study (OnES): a qualitative study of surgeon experiences of only eye surgery and recommendations for patient safety. *BMJ Open* 2019;**9**(12):e030068.
31. Liang ZC, Ooi SBS, Wang W. Pandemics and Their Impact on Medical Training: Lessons From Singapore. *Acad Med* 2020 Apr 17 [Epub ahead of print].
32. Olivia Li JP, Shantha J, Wong TY, et al. Preparedness among Ophthalmologists: During and Beyond the COVID-19 Pandemic. *Ophthalmology* 2020;**127**(5):569-72.
33. Petrovski BE, Lumi X, Znaor L, et al. Reorganize and survive - a recommendation for healthcare services affected by COVID-19 - the ophthalmology experience. *Eye* 2020 Apr 20 [Epub ahead of print].

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Declaration of competing interests: None declared.

Acknowledgements

The authors thank Dr David Yorston FRCOphth for his review of the manuscript, and the ophthalmology trainees in the West of Scotland deanery for their willingness to participate in this study during their COVID-19 redeployment.

What was known before:

- Anxiety and burnout are under-recognised and can affect clinical performance of doctors in all medical and surgical specialties.
- COVID-19 has led to the suspension of ophthalmic training programmes in the UK.
- Concern exists regarding the educational and training impact on redeployed ophthalmic trainees, but has not been quantified.

What this study adds:

- We identified a mild to moderate anxiety level amongst redeployed ophthalmic trainees, with no significant difference in ASQ scores between juniors (<100 completed cataracts) and senior trainees ($p=0.57$).
- Specific educational concerns exist regarding deskilling of cataract surgical skills, acute skills and impact of delays on future opportunities (including sub-specialty training).
- We propose other departments use this survey to identify their trainees' concerns, which should direct proposed solutions when training programmes are re-established.

Table 1: Ophthalmology trainee concerns and anxiety questionnaire (adapted from Survey Monkey)

Educational Factors relevant to ophthalmology

1	What is your gender?	Male	Female						
2	Have you ever had more than 3 consecutive months away from training since starting ophthalmology? Please select all that apply	No	Yes- sickness	Yes- maternity leave	Yes-Other (free text)				
3	What is your current stage of training?	ST1	ST2	ST3	ST4	ST5	ST6	ST7	Other (free text)
4	How many full cataract cases have you completed independently?	0	1-49	50-99	100-149	150-199			
		200-249	250-299	300-349	350+				
5	Which FRCOphth exams were you preparing to sit?	None yet	Part 1	Refraction	Part 2 Written	Part 2 Oral	None- all completed		
6	Which FRCOphth exams have you passed? Please select all relevant	None yet	Part 1	Refraction	Part 2 Written	Part 2 Oral			
7	Are you concerned about becoming de-skilled in cataract surgery?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
8	Are you concerned about becoming de-skilled in subspecialty surgical skills?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
9	Are you concerned about becoming de-skilled in General ophthalmology clinical skills?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
10	Are you concerned about becoming de-skilled in subspecialty clinical skills?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
11	Are you concerned about becoming de-skilled in Acute/oncall ophthalmology?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
12	Are you concerned about delays to completing portfolio work-based assessments?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
13	Are you concerned about delays to postgraduate examinations?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned	Not applicable as not sitting exams			
14	Are you concerned about delays to ongoing research?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
15	Are you concerned about delays with presenting your research at conferences/meetings?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned	Not applicable as not planning to present/attend any conferences			
16	Are you concerned about the financial implications to your cancelled conferences/exams etc?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned	Not applicable as no relevant payments made			
17	Are you concerned about delays to starting your next rotation?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
18	Are you concerned about missing out on a particular rotation?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
19	Are you concerned about delays to going out of programme/starting fellowship?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned	Not applicable as not going OOPT/ Fellowship			
20	In redeployment, are you concerned about feeling isolated from the ophthalmology team?	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
21	Are you concerned about missing regular ophthalmology group teaching sessions in person	Not concerned at all	Mildly concerned	Quite concerned	Very concerned				
22	Have you any other concerns?	No	Yes (please specify)	(Free text)					
23	What steps would you like the ophthalmology department to take to address these concerns? Select all which apply	Nothing New	Regular contact with others through email	mentorship with other trainees	Meetings with educational supervisor	Alternative regular programme of teaching (online etc)	Simulation sessions	Other (free text)	
24	What steps have you personally taken to address these educational concerns? Select all which apply	Nothing New	Regular contact with others through email	Initiated mentorship with other trainees	Arranged contact/ meetings with educational supervisor	Engaged with alternative regular programme of teaching (online etc)	Made use of simulation facility	Self-directed learning (reading text books etc)	Other (free text)

Standardised anxiety questionnaire (ASQ) *

25. Please read each item and fill each box with the number in the scales below that best describes your experience regarding the intensity (A) and frequency (B) of these symptoms in the past week.

INTENSITY: 0- None; 1-3- mild; 4-6- moderate; 7-9- severe; 10- extreme distress

FREQUENCY: 0- Never; 1-3- occasionally; 4-6- often; 7-9- usually; 10 – all the time

26	ASQ1a. Anxiety	Intensity	(0-10)
27	AASQ1b. Anxiety	Frequency	(0-10)
28	ASQ2a. Nervousness	Intensity	(0-10)
29	ASQ2b. Nervousness	Frequency	(0-10)
30	ASQ3a. Worrying	Intensity	(0-10)
31	ASQ3b. Worrying	Frequency	(0-10)
32	ASQ4a. Irritability	Intensity	(0-10)
33	ASQ4b. Irritability	Frequency	(0-10)
34	ASQ5a. Muscle Tension or Tightness	Intensity	(0-10)
35	ASQ5b. Muscle Tension or Tightness	Frequency	(0-10)
36	ASQ6a. Trouble Relaxing	Intensity	(0-10)
37	ASQ6b. Trouble Relaxing	Frequency	(0-10)
38	ASQ7a. Trouble Falling or Staying Asleep (Rate the most troublesome symptom):	Intensity	(0-10)
39	ASQ7b. Trouble Falling or Staying Asleep (Rate the most troublesome symptom):	Frequency	(0-10)
40	ASQ8a. Fatigue or Lack of Energy	Intensity	(0-10)
41	ASQ8b. Fatigue or Lack of Energy	Frequency	(0-10)
42	ASQ9a. Problems with Concentration or Attention	Intensity	(0-10)
43	ASQ9b. Problems with Concentration or Attention	Frequency	(0-10)
44	ASQ10a. Trouble Remembering Things	Intensity	(0-10)
45	ASQ10b. Trouble Remembering Things	Frequency	(0-10)
46	ASQ11a. Shortness of Breath, Chest Tightness or Pain, Pounding/ Skipping/ Racing/ Heartbeat (rate the most troublesome symptom)	Intensity	(0-10)
47	ASQ11b. Shortness of Breath, Chest Tightness or Pain, Pounding/ Skipping/ Racing/ Heartbeat (rate the most troublesome symptom)	Frequency	(0-10)
48	ASQ12a. Stomach Upset, Nausea, Constipation, Diarrhoea, or Irritable Bowels (Rate the most troublesome symptom)	Intensity	(0-10)
49	ASQ12b. Stomach Upset, Nausea, Constipation, Diarrhoea, or Irritable Bowels (Rate the most troublesome symptom)	Frequency	(0-10)
50	ASQ13a. Dizziness, Light-headedness, Headaches, Trembling or Shakiness (Rate the most troublesome symptom)	Intensity	(0-10)
51	ASQ13a. Dizziness, Light-headedness, Headaches, Trembling or Shakiness (Rate the most troublesome symptom)	Frequency	(0-10)
52	ASQ14a. Numbness, tingling, excessive sweating, flushing, frequent urination (rate the most troublesome symptom)	Intensity	(0-10)
53	ASQ14b. Numbness, tingling, excessive sweating, flushing, frequent urination (rate the most troublesome symptom)	Frequency	(0-10)
54	ASQ15a. Feeling Restless, Keyed up, or On Edge	Intensity	(0-10)
55	ASQ15b. Feeling Restless, Keyed up, or On Edge	Frequency	(0-10)
56	ASQ16a. Anticipated or Fearing Something Bad Might Happen	Intensity	(0-10)
57	ASQ16b. Anticipated or Fearing Something Bad Might Happen	Frequency	(0-10)
58	ASQ17a. Trouble Functioning at Home, Work, or Socially Due to Anxiety (Rate the most troublesome symptom)	Intensity	(0-10)
59	ASQ17b. Trouble Functioning at Home, Work, or Socially Due to Anxiety (Rate the most troublesome symptom)	Frequency	(0-10)

* Baker A, Simon N, Keshaviah A, et al. Anxiety Symptoms Questionnaire (ASQ): development and validation. Gen Psychiatr. 2019;32(6):e100144. Published 2019 Dec 18. doi:10.1136/gpsych-2019-100144

Table 2: Anxiety symptom questionnaire results from ophthalmology trainees during the COVID-19 pandemic

Anxiety related symptoms experienced in the past week of re-deployment	Median and range of symptom intensity and frequency scores		Number of trainees experiencing mild/moderate/ severe symptoms		
	INTENSITY (0-10) 0- None; 1-3- mild; 4-6- moderate; 7-9- severe; 10- extreme distress	FREQUENCY (0-10) 0- Never; 1-3- occasionally; 4-6- often; 7-9- usually; 10 – all the time	mild intensity	moderate intensity	severe intensity/ extreme distress
Anxiety	3 (0 to 8)	3 (1 to 10)	13 (54%)	6 (25%)	4 (17%)
Nervousness	2 (0 to 7)	2 (0 to 8)	18 (75%)	4 (17%)	1 (4%)
Worrying	3 (0 to 8)	2 (0 to 9)	12 (50%)	8 (33%)	3 (13%)
Irritability	1.5 (0 to 8)	2 (0 to 9)	13 (54%)	4 (17%)	3 (13%)
Muscle Tension or Tightness	1 (0 to 6)	1 (0 to 8)	9 (38%)	3 (13%)	0 (0%)
Trouble relaxing	1 (0 to 8)	1 (0 to 10)	9 (38%)	5 (21%)	2 (8%)
Trouble Falling or Staying Asleep	1 (0 to 9)	1 (0 to 8)	10 (42%)	4 (17%)	2 (8%)
Fatigue or Lack of Energy	2 (0 to 10)	2 (0 to 10)	10 (42%)	5 (21%)	2 (8%)
Problems with Concentration or Attention	1 (0 to 9)	2 (0 to 8)	13 (54%)	5 (21%)	2 (8%)
Trouble Remembering Things	1 (0 to 5)	1 (0 to 5)	10 (42%)	3 (13%)	0 (0%)
Shortness of Breath, Chest Tightness or Pain, Pounding/ Skipping/ Racing Heartbeat (most troublesome symptoms)	0 (0 to 7)	0 (0 to 5)	5 (21%)	1 (4%)	1 (4%)
Stomach Upset, Nausea, Constipation, Diarrhoea, or Irritable Bowels (most troublesome symptom)	0 (0 to 7)	0 (0 to 9)	3 (13%)	0 (0%)	1 (4%)
Dizziness, Light-headedness, Headaches, Trembling, or Shakiness (most troublesome symptom)	0 (0 to 3)	0 (0 to 3)	6 (25%)	0 (0%)	0 (0%)
Numbness, Tingling, Excessive sweating, Flushing, or Frequent Urination (most troublesome symptom)	0 (0 to 3)	0 (0 to 3)	6 (25%)	0 (0%)	0 (0%)
Feeling Restless, Keyed up, or on Edge	1 (0 to 9)	1 (0 to 7)	6 (25%)	5 (21%)	2 (8%)
Anticipating or Fearing Something Bad Might Happen	2 (0 to 9)	2 (0 to 8)	8 (33%)	4 (17%)	4 (17%)
Trouble Functioning at Home, Work, or Socially Due to Anxiety (most troublesome symptom)	1 (0 to 5)	0.5 (0 to 7)	10 (42%)	2 (8%)	0 (0%)