

# BMJ Open Beyond PPE: a mixed qualitative–quantitative study capturing the wider issues affecting doctors' well-being during the COVID-19 pandemic

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## ABSTRACT

The COVID-19 pandemic has brought unprecedented challenges to the medical workforce. This has put them at increased risk of burnout at a time when levels are already worryingly high in the profession, with recent studies consistently showing that around half of doctors meet the validated criteria for burnout.

**Objectives** To understand the wider factors influencing and impacting upon hospital doctors' well-being during the COVID-19 pandemic in England.

**Design** Cross-sectional survey and mixed quantitative–qualitative analysis.

**Setting** Acute National Health Service (NHS) Foundation Trust in England.

**Participants** An online survey was circulated in early June 2020 to all 449 doctors employed by the Trust. 242 doctors completed the survey (54% response rate).

**Primary outcome measures** Questions assessed occupational details, self-reported changes in physical and mental health, satisfaction with working hours and patterns, availability of personal protective equipment (PPE), medication and facilities, communication and sought to identify areas seen as having a significant effect on doctors' well-being.

**Results** 96% of respondents requiring PPE were able to access it. Nearly half of the respondents felt that their mental health had deteriorated since the start of the pandemic. Over a third stated that their physical health had also declined. Issues identified as having a negative impact on doctors included increased workload, redeployment, loss of autonomy, personal issues affecting family members, anxiety around recovery plans, inadequate access to changing and storage facilities and to rest areas that allow for social distancing. Doctors appreciated access to 'calm rooms' that were made available for staff, access to clinical psychology support, free drinks and free car parking on site.

**Conclusion** The emerging themes are suggestive of increased burnout risk among doctors during the COVID-19 pandemic and encompass factors well beyond shortage of PPE. Small organisational initiatives and the implementation of changes suggested by survey respondents can have a positive impact on doctors' well-being.

## INTRODUCTION

Levels of burnout—characterised by emotional exhaustion, reduced personal

## Strengths and limitations of this study

- This study provides a comprehensive qualitative narrative of doctors' well-being during the COVID-19 pandemic.
- The topic of doctors' well-being urgently needs further addressing during the ongoing and evolving pandemic.
- The response rate of the survey was good at 54% and appropriately represented doctors from all grades and specialties.
- The survey was conducted at a single Acute NHS Foundation Trust in the UK, limiting its external validity and generalisability.
- The cross-sectional design does not consistently allow causality to be inferred from any quantitative associations observed.

accomplishment and depersonalisation due to stressors in the workplace<sup>1</sup>—were already worryingly high among doctors prior to COVID-19, with studies reporting rates of 30%–80%.<sup>2–12</sup> Burnout levels were previously assessed at a local Acute NHS Foundation Trust using the validated Maslach Burnout Inventory,<sup>1</sup> where 49% of the senior doctors and 67% of the junior doctors met the criteria for burnout (unpublished data). Recently, the importance of doctors' well-being has been increasingly recognised by official bodies in the UK including the General Medical Council,<sup>13</sup> the British Medical Association (BMA)<sup>14–17</sup> among others.<sup>18–21</sup> Burnout affects the individual doctor, risking mental and physical ill-health,<sup>22</sup> reduces the quality of patient care<sup>23</sup> and leads to maladaptive coping strategies that impair relationships with both patients and colleagues.<sup>24</sup> There is growing evidence that organisational strategies that improve the working environment have significantly greater impact on the

well-being of physicians than strategies targeting the individual and their resilience alone.<sup>3 25 26</sup>

Almost a year into the COVID-19 pandemic, the unprecedented impact on healthcare services has become clear across the globe. The increased demand on services, restructuring of resources, cessation of elective activity, requirement for personal protective equipment (PPE), command and control structure and risk of infection of staff have all challenged doctors' well-being.<sup>21 27</sup> Reports from countries severely affected early in the pandemic suggested that 15%–90% of doctors were at risk of burnout.<sup>28–33</sup> Recognising the additional impact of COVID-19 on already high burnout rates, the BMA has launched national surveys assessing doctors' mental well-being.<sup>34</sup> However, none of these studies has included the assessment of qualitative data to lend doctors a voice to express concerns beyond those listed in the templates of their questionnaires.

Therefore, a decision was made during the first wave in May 2020 within the same Acute NHS Foundation Trust in which the aforementioned burnout questionnaire was distributed to conduct a further survey, this time to assess for the impact of COVID-19 on the medical workforce. The aim was to identify factors that were modifiable within a reasonable time frame, while the more obvious shortages of PPE and patient beds have attracted much media coverage, to our knowledge, there has not yet been any in-depth analysis of the wider factors influencing doctors' well-being, which could be more significant *en masse*, and in the longer term.

## OBJECTIVES

The key objective was to capture a snapshot of doctors' experience of working through the first phase of the pandemic using a survey and thematic analysis. We sought to understand which factors have caused most concern to doctors working in an Acute NHS Foundation Trust. We aimed to evaluate the impact of interventions which this Trust had already put in place to support doctors' well-being and to determine which further interventions could be beneficial.

## METHOD

All doctors employed at the Acute NHS Trust were sent an email from a database held by the Human Resources Department to the employees' work email addresses. This email contained information describing the study and an encrypted link to an anonymised online questionnaire for completion during the period of 4–19 June 2020. Participants were reassured that the responses would be anonymous and not identifiable when used for audit and research purposes. Informed consent was implied on return of the survey. The study was approved by the Trust's Research Operational Committee.

## Patient and public involvement

The focus of this study was on doctors in secondary care without direct patient or public involvement. However,

the survey also assessed issues affecting doctors as individuals outside of the working environment; this included the impact of contracting COVID-19, therefore, becoming patients themselves and the wider impact on friends and family.

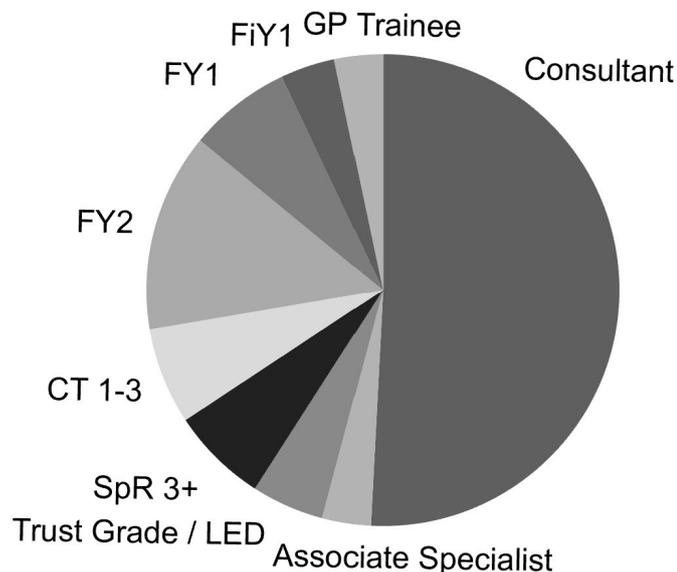
## Study questionnaire

The cross-sectional survey was created using the Survey-Monkey platform. The format mostly consisted of nominal, multiple-choice questions, followed by a free-text 'other' option, with the exception of two exclusively free-text questions (see online supplemental file 1 for the complete layout of survey). By using the free-text questions, we allowed the respondents the opportunity to give their wider narrative on issues of importance that may not have been captured by the specific questions and may have been overlooked by larger scale studies.

The topics of the questions were chosen based on several sources: first, findings published by other official bodies invested in doctors' well-being in the early stages of the pandemic, including the Royal College of Anaesthetists<sup>35</sup> and the BMA<sup>34</sup>; second, wellbeing-related work previously undertaken internally at the Trust and finally, common discussion topics sampled from informal sources including social media, mainstream media and topics frequently discussed among staff members. These topics included PPE; availability of medications; redeployment; working hours and patterns; staff facilities and testing. Response biases were minimised by the broad spectrum of input to the survey sought prior to distribution, including the Trust's Human Resource department, Communication team, Estates and Facilities, Better Working Lives Group (BWLG) and Junior Doctor Forum. Prior to wider circulation, a draft survey was distributed to several representative clinicians for review.

## Analysis

Quantitative data were collected as part of the survey to accompany our qualitative analysis in presentations to our trust members and management structures. Simple quantitative data analysis of survey results and demographics was performed using Microsoft Excel. Qualitative data were initially analysed manually by the senior author and then grouped together through thematic analysis, based broadly on the worklife themes identified by Leiter and Maslach<sup>36</sup> and COVID-19-specific themes frequently featuring in the free-text answers. A consensus meeting was held where all authors reviewed the free-text responses and agreed their attribution across seven themes. Detailed statistical group analysis was not performed as the numbers of responses were too low to allow meaningful comparison between groups and most of the data were nominal.



**Figure 1** Demographics by grade of doctors responding to our survey and across the Trust at which the survey was undertaken (N=242). GP, general practice; LED, Locally Employed Doctor.

## RESULTS

### Demographics of survey respondents

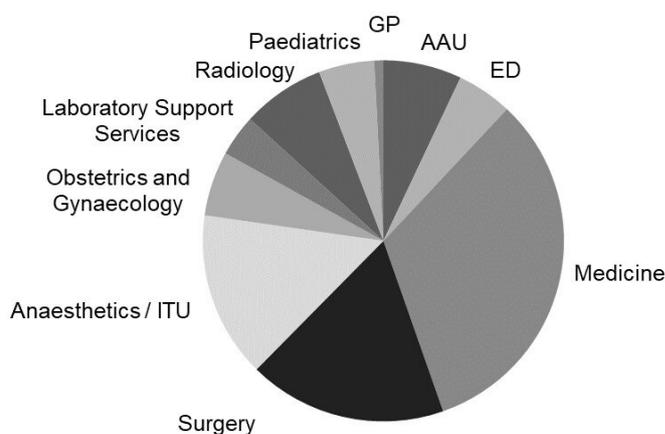
In total, 242 out of 449 doctors completed the survey, a response rate of 54%.

Of the 242 respondents, 123 were consultants (50.1%) and 119 were doctors of other grades (49.9%), including associate specialists (3.3%), trust grade and locally employed doctors (5%), specialty registrars (6.6%), core trainees in years 1–3 (16.6%), foundation year 2 doctors (13.7%), foundation year 1 doctors (7%), interim foundation doctors (3.7%) and general practice trainees (2.1%). Respondents represented different specialties and areas of work, with about a third reporting to usually work in a medical specialty (32.6%), surgery (17.8%), anaesthetics and intensive treatment unit (ITU) (14.9%), radiology (7.4%), acute assessment unit (7%), obstetrics and gynaecology (5.8%), the emergency department (5%), paediatrics (5%), laboratory services (3.7%) and general practice (0.8%). The demographics are summarised in figures 1 and 2.

### Impact on mental and physical health

Almost half of all respondents reported a decline in their mental health (47.1%). One doctor wrote: ‘Dealing with the impact of COVID-19 on my mental health has been tough. The prolonged uncertainty is ongoing, with the added stress of not being able to see friends or family and not being able to turn to my usual things to de-stress. I struggle to sleep, and on my days off, it can be difficult to forget about work’.

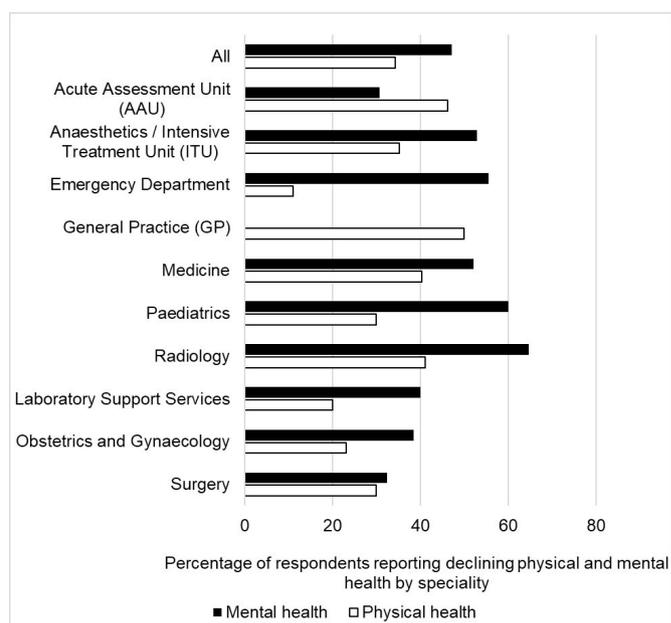
Over a third of respondents felt their physical health had deteriorated during the pandemic (34.3%). There were differences across specialities in our Trust; doctors in all specialities with the exception of Acute medicine saw a greater decline in mental health compared with



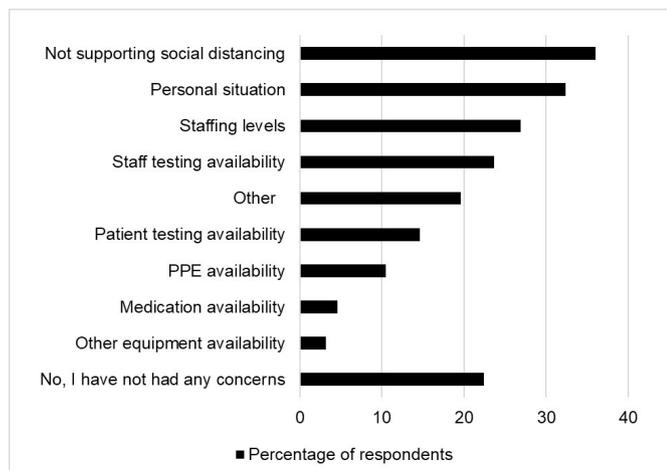
**Figure 2** Demographics by specialty of doctors responding to our survey and across the Trust at which the survey was undertaken (N=242). AAU, acute assessment unit; ED, Emergency Department; GP, general practice; ITU, anaesthetics/intensive treatment unit.

physical health (figure 3). The greatest source of concern were colleagues and the environment not supporting social distancing and the individual’s personal situation, which is mentioned above (figure 4).

Further significant causes of distress appeared to be staffing levels; the availability of staff testing; theatre flow and working environment; annual leave (the ability to book leave and having to cover absence of colleagues); effect on patient care (missed cancer diagnoses, delays in treatment, theatre waiting lists); recovery phase and the return to ‘normal activity’; lack of guidance or leadership; tiredness, stress and fatigue; feeling undervalued; relations between different specialities and staff group



**Figure 3** Self-reported decline in physical and mental health among respondents; specialities are listed here by alphabetical order (N=210; the question was not made compulsory in the survey). AAU, acute assessment unit; GP, general practice; ITU, anaesthetics/intensive treatment unit.



**Figure 4** Causes of anxieties and stress, as identified by the nominal (quantitative) question: ‘Within the past 2 weeks, have any of the following caused you additional worry or anxiety?’ (N=219; the question was not made compulsory in the survey). PPE, personal protective equipment.

and increased vulnerability of Black, Asian and minority ethnic (BAME) staff. ‘We need proper, practical on the floor support for BAME staff, particularly those who are the top of the high-risk profile’.

### Thematic analysis

Seven worklife themes were identified (figure 5): the lack of things, workload volume/parity/working patterns, culture, communication, control/autonomy, reward/recognition and personal issues.

#### The lack of things

There were 26 free-text answers falling under the theme of ‘lack of’ and, interestingly, these mostly related to the physical environment. The most frequently raised issue



**Figure 5** Manual qualitative analysis of the free-text answers to the survey led to the identification of seven major themes, many of which overlap with the factors relevant to burnout as identified by Leiter and Maslach (see text).

was lack of space to allow for social distancing and the general lack of adherence to social distancing rules. This is in line with the quantitative data, which showed that only half of all respondents felt that they had sufficient access to rest areas that allowed for social distancing (55.3%), to changing facilities with sufficient room to allow for social distancing (45.2%) and to adequate secure facilities for storage of personal items (55.6%). Other issues identified included the lack of scrubs, of hand gel, of COVID-19 staff testing and of cleaning of doors and communal areas, such as coffee rooms and the staff canteen.

Medication and PPE availability seemed to be less of a concern in our Trust at the time the survey was undertaken. The majority of respondents (96.0%) reported having access to the necessary PPE required for their role. 16% of respondents had felt pressured into seeing a patient with suspected or confirmed COVID-19 without adequate PPE. When asked who, or what, made them feel pressured into doing so, respondents attributed this to the urgency of the situation or patient’s condition; external pressure from senior and junior colleagues; internal pressure from self and pressure from multiple sources including ward managers, nursing colleagues, senior management, ‘specific ward guidelines’, ‘poor national and local guidance’ and ‘COVID-positive patients on non-COVID wards’. Of the respondents who stated that medication availability was a concern, only one respondent said a drug had actually been unavailable for them to prescribe. None of the respondents felt medication shortage had resulted in a negative impact on the quality or effectiveness of the treatment they were able to offer a patient.

#### Workload volume, parity and working patterns

The majority of respondents (90%) had seen changes in their rota or working pattern. In general, this meant more working hours: 56.2% of all doctors responding to the survey reported working more hours regularly than previously and 49.3% reported not always being able to take adequate breaks during working hours. Almost half of all respondents reported having to take time off work for a reason that was directly related to the pandemic (44.0%), most commonly due to a suspected or confirmed diagnosis of COVID-19 in themselves (28.7%) or due to a household member being affected (14.4%). Other reasons for taking time off were stress or anxiety directly related to the pandemic (4.2%), self-isolation (shielding) due to underlying medical conditions (1.4%) and child-care commitments (1.4%). Furthermore, about a third of all respondents had been redeployed or moved into a different area of practice, away from their usual place of work (31.5%). Many of those who had been redeployed felt they had not received adequate induction (40%), although the survey did not specify or ask further what would constitute adequate induction training.

There were 19 free-text answers under the theme of workload. Unsurprisingly, increased workload volume was a frequently raised issue, but there was also an

emphasis on parity of workload, with some respondents noting certain specialities were shouldering more of the COVID-19 workload than others. 'Our department has been under significant pressure over the last 10 weeks. However, it is apparent that not all staff or departments are under the same pressures or workloads'. The burden of increased out of hours work was also highlighted, with schedules described as unhealthy, emotionally draining and adversely affecting sleep. 'One needs to ensure well-being rotas and not just compliant rotas. Going from days to nights to days is unhealthy and causes sleep disturbance'. Concerns were also raised about the potential impact of the recovery phase. 'What caused early distress was the urgency to reconfigure at the beginning—a time full of adrenaline and anxiety about what was to come. Then, the exhaustion of working all hours and not being able to sleep. Now, the burnout makes it hard to keep going and have the energy to plan for the recovery... A rollercoaster with no end in sight'.

### Culture

There were 16 comments relating to culture. Areas highlighted included the need to: engage and motivate teams, encourage staff to contribute, acknowledge and appreciate the efforts staff have gone to through the pandemic and treat staff with empathy and kindness in the workplace. 'We need more of a listening and compassionate culture. We are all professionals and everyone's voice counts'. 'We need a change in workplace culture where all team members are engaged in the decisions about their working life, are encouraged to contribute to policy developments and feel consulted and valued for their contribution'.

### Communication

Half of all respondents (49%) felt that they had received just the right amount of information and communication regarding the COVID-19 situation from the Trust. Junior doctors were more likely to respond that there was not enough information; however, consultants were more likely to respond that there was too much information. In terms of resources predominantly used by doctors in our Trust to access the most up-to-date information about the pandemic, both electronic forms and in-person communication such as small group and online meetings and teaching were valued.

There were 15 comments within the theme of communication. Many of these related to the need to communicate not just the decision, but the rationale underpinning it, more clearly. It was felt that the command and control structure had restricted bottom-up communication and suggestions for change. Several respondents pointed out that information provided by the Trust on the COVID-19 pandemic was often conflicting: 'too much information, not enough communication, too many opinions'; 'the responsibility to assimilate all this conflicting advice is the source of stress'. Several doctors also expressed an interest in easier access to the Trust's own COVID-19

statistics. Finally, respondents highlighted the need for clearer communication about changes in responsibilities and the need to share plans for the recovery phase.

### Control and autonomy

There were 11 comments relating to control and autonomy. The command and control structure adopted by NHS Trusts during the pandemic followed national guidance in the UK.<sup>37</sup> However, several respondents disliked the associated loss of autonomy, stating that it negatively affected the ability to work in a collaborative manner. Some doctors also felt that working patterns were forced on them without consultation, and as a result felt marginalised. 'I have found the command and control structure the worst thing for my wellbeing and for the ability of teams to work in a professional manner'. 'Less pressure to work outside of one's comfort zone, and more understanding that everyone's personal circumstances are different [would be appreciated]'.

### Reward and recognition

There were 10 comments relating to reward and recognition. Access to free food and drinks, the introduction of calm rooms and free car parking and the expansion of psychological support services were widely recognised as helping doctors feel recognised and acknowledged as well as boosting morale. For example: 'Free coffee and car parking makes me feel that my contribution is actually respected'. Some specialities, in particular, acute physicians, felt that their contribution had not been appropriately recognised in the same manner as those working in ITU. 'A proper acknowledgement of the work that Medicine is doing would be appreciated. Physicians have felt marginalised, living in the shadow of ITU colleagues, whereas the workload has been greatest for us'. Those on part-time contracts also felt that the disproportionate increase in their workload had not been recognised.

### Personal

The personal impact of COVID-19 was highlighted by 10 respondents. Issues raised included a negative effect on relationships with family and friends, sleep quality and work-life balance. Comments also mentioned the increased vulnerability of BAME staff as a cause of personal concern: 'The anxieties involved with being a BAME healthcare worker; even though one passes the risk assessment doesn't make you immune to the virus'.

## DISCUSSION

Our cross-sectional survey aimed to identify the factors affecting the well-being of doctors in an Acute NHS Foundation Trust 3 months into the pandemic, to evaluate the impact of measures the Trust had put in place to support doctors and to highlight further steps that could be taken to support doctors in the workplace. The themes that emerged were broadly consistent with previously identified drivers for burnout in doctors,<sup>36 38</sup> with an associated



impact on mental health.<sup>39</sup> Unsurprisingly, increased workload volume was a dominant theme, but the results also highlighted areas more easily amenable to intervention, for example, through improving culture and communication and appropriately recognising doctor's contributions. Not all was negative; highlighting the positives was equally important to inform further planning. The introduction of free drinks, car parking, calm rooms, the availability of free food out of hours and the expansion of psychological services were widely appreciated by doctors.

The self-reported negative impact of the COVID-19 pandemic on both the mental and physical health of survey respondents was significant, with nearly half (47.1%) reporting a deterioration in mental health, while a third (34.3%) reported a deterioration in physical health since the start of the pandemic. This was a self-reported outcome rather than measured on a validated scale. Nevertheless, in a workforce with burnout levels prior to COVID-19 of over 50%,<sup>3 5</sup> this is a real concern. Left unchecked, the increased levels of stress will undoubtedly result in higher levels of burnout. Data from early studies affirmed a high risk of burnout among doctors during the COVID-19 pandemic, with studies reporting burnout rates of 15%–90%.<sup>28–31 40 41</sup> A rapid review and meta-analysis of 12 studies performed in China and one study in Singapore suggested that the prevalence of anxiety, depression and insomnia among healthcare workers (including both doctors and nurses) during the COVID-19 pandemic was 23%, 23% and 39%, respectively.<sup>42</sup> Similar or worse results have been reported for doctors in Europe<sup>40 43</sup> and the USA.<sup>31</sup> The contributors to any perceived deterioration in mental health are generally acknowledged to be complex and multifactorial. The themes that our current study identified included changed working patterns, staffing levels, the personal situation in the face of illness and death, lack of ability to socially distance, availability of staff testing for COVID-19 and dissatisfaction with the command and control structure and discrepancies in information.

Of particular note, the command and control structure and its top-down hierarchy imposed nationally in the UK on every NHS Trust at the beginning of the pandemic<sup>44 45</sup> were perceived by many respondents as having a negative impact on a sense of autonomy and value. While such a structure may aid rapid decision-making, it risks a loss of empathy and compassion—both crucial prerequisites for maintaining a healthy working environment in the longer term. Therefore, it could have significant negative impact on the well-being of those who are at the receiving end—mirroring the views expressed by others previously.<sup>27 46</sup> Moving forward, a more collaborative approach is likely to have a more positive impact on the sense of control, autonomy and engagement that are key to the well-being of healthcare workers.<sup>10 38</sup>

While the limited availability of PPE had caused major concern across NHS hospitals early on in the pandemic,<sup>34 47 48</sup> PPE shortage was not one of the principal concerns among

doctors at the time of this survey in June 2020. Rather, other deficits in the working environment were highlighted as more significant to this Trust's doctors at this point, most notably the lack of access to adequate changing facilities, secure lockers, scrubs and the lack of both office space and adequate rest areas to facilitate adherence to social distance guidelines. Social distancing has been identified as a cause of concern not only for individuals in general<sup>49</sup> but also specifically for clinicians.<sup>50</sup> Locally, the Space Utilisation Group of the Acute Trust is now addressing the issue of lack of space for adequate social distancing.

This leads us to three important take-home messages. First, we predict that concerns about shortage of facilities including rest spaces may be affecting many hospitals across the globe which were not built for the purpose of coping with a pandemic in the first place. This should be taken into consideration when planning for further waves. Second, given that the Acute Trust in question was less severely affected by the lack of PPE and also by the COVID-19 case-load than many other NHS hospitals—with a total of 254 COVID-19-positive patients being admitted to the Trust over the period of 4 months as of 13 July 2020<sup>51</sup>—we are concerned that the survey results might represent doctors' well-being and burnout at the better end of a spectrum: doctors are at extremely high risk of burnout during the COVID-19 pandemic. Third, we hope to instigate further interest in well-being research and initiatives during the pandemic and beyond. Research has consistently shown that structural and organisational interventions are more effective in improving physician burnout than those targeting individuals, although the combination of the two is the most effective.<sup>3 23 26</sup> One way to ensure and facilitate well-being work at a local level is through a dedicated position of responsibility or working group. For instance, in the Trust in question, a Better Working Lives Group (BWLG) had been set up in the past year to address the issues of doctors' well-being and burnout. Therefore, uniquely, a previous questionnaire on doctors' well-being was available to provide information on local levels of burnout prior to COVID-19 to inform the creation of this current survey. The good response rates to both surveys suggest that doctors are invested in their well-being. The BWLG further ensured the expansion of clinician-led psychological support services available to all doctors at the Trust and was involved in the introduction of the calm rooms. These initiatives were explicitly mentioned by doctors responding to our survey with gratitude, but more importantly, they are also supported by evidence in well-being research more widely.<sup>15 16 18 52</sup>

This study had several strengths and weaknesses. First, as a cross-sectional study at a single Acute NHS Foundation Trust in England conducted during a dynamic healthcare crisis causing uncertainties across the globe, we acknowledge that the generalisability of our findings is limited. We hope to instigate more interest in further well-being research instead by communicating our local findings. Second, cross-sectional surveys provide a snapshot of responses at a single time point and allow no causality to be

inferred, especially in the presence of the risk of any recall biases. However, attempts at minimising recall and response biases were made as explained in the method section. Any discussion of potential causality was made based on free-text answers which often explicitly mentioned a self-reported cause for distress rather than through combination of individual nominal questions in the survey. Third, the focus on qualitative data has inherent drawbacks, as issues that are highlighted may apply to a small subset of doctors or even single individuals. At the same time, the qualitative analysis of our study of a sample size of 242 is the main and unique strength of this study, as manual analyses of open-ended, free-text questions becomes too laborious with a larger sample size than here, and their interpretation is difficult when pooling too many different contexts.

Going forward, we hope to see a combination of large-scale, powered studies on well-being in healthcare such as the BMA well-being survey,<sup>34</sup> longitudinal studies using validated burnout tools and focused mixed qualitative-quantitative or purely qualitative studies on well-being, of which some are already underway.<sup>53</sup> Future work should also particularly consider the well-being and burnout rates of nurses and other healthcare professionals who are also at high risk of burnout<sup>41</sup> and of healthcare professionals who have been identified as vulnerable to COVID-19 or at higher risk of burnout and mental ill-health, such as BAME,<sup>54</sup> female<sup>31</sup> and nonbinary professionals. It will be essential to keep the well-being of healthcare workers high on the agenda and involve them in local decision-making to prevent burnout and deleterious effects on the well-being not only of the individual doctor but also the nation: doctors' well-being is still too often a missing quality indicator in healthcare<sup>55</sup> and it is absolutely essential not to return to status quo, or worse, after the pandemic.<sup>56</sup>

## CONCLUSION

While a shortage of PPE, frequent confrontation with deaths and personal losses do constitute important causes of distress among doctors during the COVID-19 pandemic, there are numerous other less obvious but crucial factors underpinning doctors' well-being and stress levels during such a sudden, rapid change in the health service. On the one hand, this is alarming, as burnout rates were high among the profession prior to the pandemic. On the other hand, it is also helpful to dissect these factors, as many of the issues raised can be tackled and addressed—often through small but impactful organisational changes, as we have shown here. Our findings may be generalisable to an extent to other NHS Trusts in the UK, but more importantly, we hope to instigate further interest in doctors' well-being research, both during the COVID-19 pandemic and beyond.

## ORIGINAL PROTOCOL

See supplemental files for a copy of the survey (online supplemental file 1).

**Contributors** All authors met at least one of the criteria recommended by the ICMJE and have agreed on the final version of the manuscript. LJC, CJS, LCJ and PDM were involved in conceiving and designing the original protocol. LJC conducted the quantitative analysis of the results, YRI and PDM conducted qualitative analyses. YRI wrote the first draft in the manuscript. LJC, CJS, LCJ and PDM contributed to subsequent drafts.

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**Competing interests** LJC, YRI, CJS, LCJ and PDM were employed by the Trust at the time the survey was undertaken and declare no further competing interests.

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1 **SUPPLEMENTARY FILE 1: SURVEY QUESTIONNAIRE**

2

3 **Q1 What is your usual speciality or area of work?**

- 4 • Emergency Department
- 5 • AAU/Acute Medicine
- 6 • Other Medical Speciality/ward
- 7 • Surgery
- 8 • Anaesthetics/ITU
- 9 • Obstetrics and Gynaecology
- 10 • Laboratory Support Services
- 11 • Radiology
- 12 • Paediatrics
- 13 • GP

14 **Q2 What is your current grade?**

- 15 • Consultant
- 16 • Associate Specialist
- 17 • Trust Grade/ Locally Employed Doctor
- 18 • SpR (SpR 3+)
- 19 • Core Trainee (CT1-CT3)
- 20 • FY2
- 21 • FY1
- 22 • FiY1
- 23 • GP Trainee

24 **Q3 The Trust has been receiving regular deliveries of PPE, but we wanted to**

25 **make sure these have been reaching you. In the last 2 weeks, have you been able**

26 **to access the necessary PPE required for undertaking your role with patients with**

27 **either suspected or confirmed COVID-19 infection?**

- 28 • Yes
- 29 • No
- 30 • Not applicable

31 **Q4 During the past 2 weeks, which items of PPE have not been available? Tick all**  
32 **the apply.** (*Question only seen by respondents selecting 'No' to Q3*)

- 33 • Gloves
- 34 • Plastic aprons
- 35 • Fluid resistant gowns
- 36 • Fluid repellent face masks
- 37 • FFP3 mask/ respirator
- 38 • Eye protection
- 39 • Face visor
- 40 • Scrubs
- 41 • Other (please specify)

42 **Q5 Have you ever felt pressured into seeing a patient with suspected or**  
43 **confirmed COVID-19 without the necessary PPE?**

- 44 • Yes
- 45 • No

46 **Q6 Who or what made you feel pressured into seeing a patient with suspected or**  
47 **confirmed COVID-19 without adequate PPE?** (*Question only seen by respondents*  
48 *selecting 'Yes' to Q5*)

- 49 • Colleague
- 50 • Senior Colleague
- 51 • Internal pressure from self
- 52 • Urgency of the situation or severity of the patient's condition
- 53 • Prefer not to say
- 54 • No alternative option
- 55 • Other (please specify)

56 **Q7 Within the past 2 weeks, have any of the below caused you additional worry or**  
57 **anxiety?**

- 58 • No, I've not had any additional worries
- 59 • PPE availability
- 60 • Staffing levels
- 61 • Your personal situation (e.g. physical/mental health concerns, redeployment etc.)

- 62 • Medication availability
- 63 • Other equipment availability
- 64 • Availability of staff testing
- 65 • Availability of patient testing
- 66 • Colleagues and/or environment not supporting social distancing appropriately
- 67 • Other (please specify)
- 68 **Q8 What, if any medications have you found to be unavailable in the past 2**
- 69 **weeks?** (*Question only seen by respondents selecting 'Medication availability' in Q7*)
- 70 • Anaesthetic agents
- 71 ○ Always been available
- 72 ○ Not always available
- 73 ○ Not relevant to my practice
- 74 • Analgesia
- 75 ○ Always been available
- 76 ○ Not always available
- 77 ○ Not relevant to my practice
- 78 • Antibiotics
- 79 ○ Always been available
- 80 ○ Not always available
- 81 ○ Not relevant to my practice
- 82 • Inotropes
- 83 ○ Always been available
- 84 ○ Not always available
- 85 ○ Not relevant to my practice
- 86 • Oxygen
- 87 ○ Always been available
- 88 ○ Not always available
- 89 ○ Not relevant to my practice
- 90 • Sedatives
- 91 ○ Always been available
- 92 ○ Not always available

- 93           ○ Not relevant to my practice
- 94       • Other (please specify)
- 95       **Q9 Have you felt the unavailability of medications has had a negative impact on**
- 96       **the quality or effectiveness of treatment that you have given to a patient?**
- 97       *(Question only seen by respondents selecting 'Medication availability' in Q7)*
- 98       • Yes
- 99       • No
- 100       **Q10 Have you been redeployed or moved to another area of practice, or away**
- 101       **from your usual place of work?**
- 102       • Yes
- 103       • No
- 104       **Q11 Did you receive adequate induction and training to work in the area to which**
- 105       **you have been redeployed? (Question only seen by respondents selecting 'Yes' in**
- 106       **Q10)**
- 107       • Yes
- 108       • No
- 109       **Q12 Have you taken any time off work due to the effects of the COVID-19**
- 110       **outbreak? Select all that apply.**
- 111       • No
- 112       • Yes, I have had a suspected or confirmed COVID-19 and I have had to self-
- 113       isolate
- 114       • Yes, a member of my household has had suspected or confirmed COVID-19 and
- 115       I have had to self-isolate
- 116       • Yes, I have had to self-isolate due to a medical condition, as per national and
- 117       occupational health advice
- 118       • Yes, I have had to take time off due to childcare commitments
- 119       • Yes, I have taken time off work for stress/anxiety reasons related to COVID-19
- 120       **Q13 Over the past 2 weeks, have you tried to access testing for yourself?**
- 121       • Yes – was able to be tested
- 122       • Yes – have not been able to be tested
- 123       • No

124 **Q14 Over the past 2 weeks, have you always been able to access testing for**  
125 **patients?**

- 126 • Yes
- 127 • No
- 128 • Not applicable

129 **Q15 Over the past 2 weeks, have you been able to take adequate breaks during**  
130 **your working hours?**

- 131 • Yes, always
- 132 • Sometimes
- 133 • No

134 **Q16 Do you have sufficient access to rest areas with appropriate facilities and**  
135 **space to allow for social distancing?**

- 136 • Yes
- 137 • No
- 138 • If you wish to comment about you answer, please do so here

139 **Q17 have you had access to changing facilities with sufficient room to allow for**  
140 **social distancing?**

- 141 • Yes
- 142 • No
- 143 • If you wish to comment about you answer, please do so here

144 **Q18 Have you had access to adequate secure facilities for storage of personal**  
145 **items?**

- 146 • Yes
- 147 • No
- 148 • If you wish to comment about you answer, please do so here

149 **Q19 Have you had access to shower facilities to use prior to going home or when**  
150 **you have been contaminated?**

- 151 • Yes, I have had access and have used the showers
- 152 • Yes, I have had access but have note needed to use the showers
- 153 • No, I've wanted to use the showers but have been unable to
- 154 • No, I've not wanted to use them/prefer to shower at home

155 **Q20 what factors have prevented you from using the showering facilities? Tick all**  
156 **that apply.** (*Question only seen by respondents selecting 'No, I've wanted to use the*  
157 *showers but have been unable to' in Q10)*

- 158 • Too far away from my usual place of work
- 159 • The wait time/queue length has been too long
- 160 • The facilities have been dirty
- 161 • Lack of towels and/or shower products
- 162 • I don't know where they are
- 163 • Other (please specify)

164 **Q21 What factors would encourage or allow you to access showering facilities at**  
165 **the hospital?**

- 166 • Closer to my area of work
- 167 • The cleanliness or newness of facilities
- 168 • Sufficient number of showers that the queue/wait time was short
- 169 • Greater awareness of the facilities and their location
- 170 • I would never use showering facilities at the hospital
- 171 • Other (please specify)

172 **Q22 Since the pandemic started, has your rota or working pattern changed?**

- 173 • Yes
- 174 • No
- 175 • Other (please specify)

176 **Q23 Since the pandemic started, are you regularly working more hours than**  
177 **previously?**

- 178 • Yes
- 179 • No

180 **Q24 Since the pandemic started, my mental health is:**

- 181 • The same as it was prior to the pandemic
- 182 • Better than it was prior to the pandemic
- 183 • Worse than it was prior to the pandemic
- 184 • Would prefer not to say

185 **Q25 Since the pandemic started, my physical health is:**

- 186       • The same as it was prior to the pandemic  
187       • Better than it was prior to the pandemic  
188       • Worse than it was prior to the pandemic  
189       • Would prefer not to say

190       **Q26 How have you found the amount of information and level of communication**  
191       **regarding the COVID-19 situation that you have received from the Trust?**

- 192       • Just the right amount of information  
193       • Too much information  
194       • Not enough information  
195       • Other (please specify)

196       **Q27 What have been the easiest ways for you to access information from the**  
197       **Trust regarding the COVID-19 response? Tick all that apply**

- 198       • Trust Intranet  
199       • COVID-19 staff information hub (also called the extranet)  
200       • Daily COVID-19 briefing email  
201       • Green Sheet  
202       • Other emails, e.g. from colleagues and leaders  
203       • Face-to-face from direct team  
204       • Face-to-face from leaders  
205       • Informal discussion groups, e.g. WhatsApp  
206       • Social Media (e.g. Twitter, Facebook etc.)  
207       • Information posters  
208       • NHS website  
209       • Public Health England Website  
210       • Other (please specify)

211       **Q28 Do you feel the Trust has provided sufficient Well-being support?**

- 212       • Yes, and I have been able to access it  
213       • Yes, but I've not needed to access it  
214       • No, there is additional support needed  
215       • Don't know/would prefer not to say

216       **Q29 What additional steps could be taken to support you in the workplace?**

217 **Q30 If you would like to expand further on any of the topics covered in this**  
218 **survey or wish to raise any further points, please either do so here or contact a**  
219 **member of the team via email.**  
220  
221