White Rose Research Online

eprints@whiterose.ac.uk
https://eprints.whiterose.ac.uk
Universities of Leeds, Sheffield and York

Deposited via The University of York.

White Rose Research Online URL for this paper:
https://eprints.whiterose.ac.uk/id/eprint/195723/

**Monograph:**
Jefferson, Laura Anne, Bloor, Karen Elizabeth, Golder, Su et al. (2021) Exploring the impact of COVID-19 on GP wellbeing. Report.

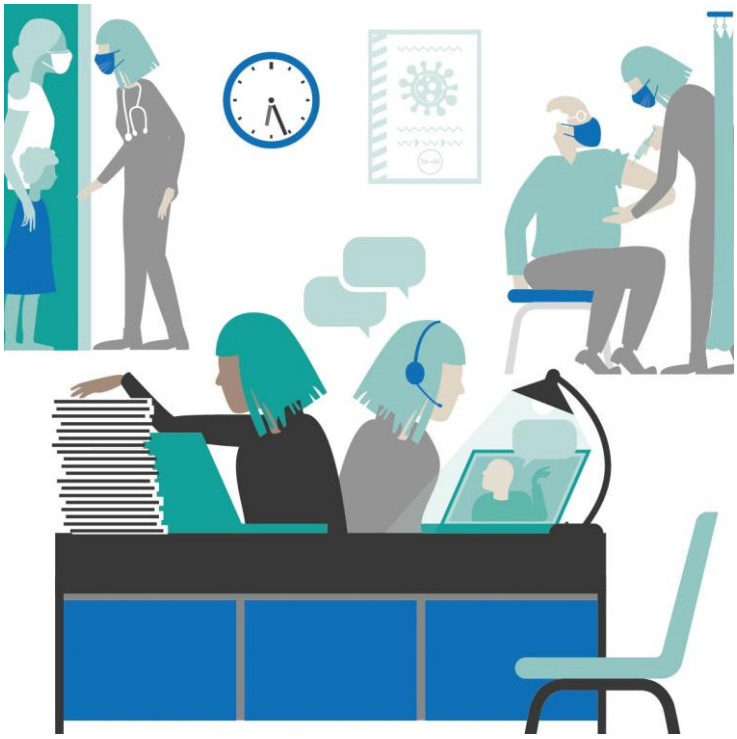
**Reuse**
Items deposited in White Rose Research Online are protected by copyright, with all rights reserved unless indicated otherwise. They may be downloaded and/or printed for private study, or other acts as permitted by national copyright laws. The publisher or other rights holders may allow further reproduction and re-use of the full text version. This is indicated by the licence information on the White Rose Research Online record for the item.

**Takedown**
If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.

UNIVERSITY OF LEEDS
University of Sheffield
UNIVERSITY of York

# Exploring the impact of COVID-19 on GP wellbeing

# Final Report



Jefferson, L., Bloor, K., Golder, S., Heathcote, C., Castro Avila, A., Dale, V., Doran, T., Essex, H., van der Feltz Cornelis, C., McHugh, E., Moe-Byrne, T.

Department of Health Sciences, University of York

This research is funded by the National Institute for Health Research (NIHR) Policy Research Programme (project reference **NIHR202329**). The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

Submission date: 07/09/21

## Acknowledgements

We would like to thank the members of our Project Steering Committee meeting for their contributions throughout the design and conduct of this study: Prof Dame Clare Gerada, Prof Michael West, Prof Michael Holmes and our Patient and Public Representatives for their contributions throughout: Patricia Thornton, Stephen Rogers and Emma Williams. We thank Prof Kath Checkland and Prof Matt Sutton for their helpful discussions during the design and conduct of this study and Professor Mike Thelwall, creator of Mozdeh at the University of Warwick for providing the Twitter dataset used in the social media analysis.

## Author contributions

This study was designed and conceived by LJ and KB, with specific methodological expertise from SG with regards social media and review methods. In work package one, SG undertook database searches, HH, EM, LJ and SG screened search results. EM, LJ, CH, ACC, SG and TMB contributed to data extraction and quality assessment, which LJ and CH synthesized. VD contributed statistical support to the pooled age and gender data for the review and supported the social media analysis. SG led the social media analysis and wrote this section of the report, to which all authors contributed and commented. ACC, EM, HH, LJ and SG conducted the qualitative analysis of social media data, which SG synthesized. LJ and CH conducted interviews and analysis for work package three. CVDFC provided topic expertise and contributed throughout the project in relation to the wider literature on GP wellbeing. LJ wrote the first draft of this report, to which all authors commented. All authors have read and agreed the final version.

## Ethical Approval

This study was approved by the Health Sciences Research Governance Committee, University of York in December 2020. No HRA approval was required for this study.

## Funding

This report is independent research commissioned and funded by the Department of Health and Social Care Policy Research Programme (Exploring the impact of COVID-19 on GPs' wellbeing, NIHR202329). The views expressed in this publication are those of the author(s) and not necessarily those of the Department of Health and Social Care.

## Competing interests

None declared

# Contents


Lay Summary 4

Executive Summary 5

Key Findings 9

Background 11

Aims and Objectives 11

Scoping Review 12

- Introduction 12
- Methods 12
- Results 13
- Summary of work package 24

Social Media Analysis 26

- Introduction 26
- Methods 26
- Results 27
- Summary of work package 40

Qualitative interview study 41

- Introduction 41
- Methods 41
- Results 43
- Summary of work package 80

Discussion 81

Patient and Public Involvement 89

Appendices 90



Keywords: *COVID-19, coronavirus, general practitioners, mental health, pandemic, qualitative research, review, social media, stress, well-being*

# Lay summary

NHS general practitioners (GPs) have reported increasing stress and burnout over recent years. This is potentially damaging not just to doctors, but also to patients and to the health care system. The coronavirus pandemic has challenged GPs in many ways, but may also offer some new approaches to dealing with long-lasting problems.

Our three studies sought to: 1) summarise global evidence on the effect of the pandemic on the wellbeing of GPs; 2) examine GPs' comments on Twitter to explore their experiences and how their views have changed over time; and 3) interview a range of GPs to understand their experiences during the pandemic, and their future plans.

Our evidence review found 35 relevant studies published on GP wellbeing during the pandemic. Just three studies looked at UK GPs' experiences, and these focused on small or local groups of GPs.

Our findings from social media analysis and interviews show that GPs have faced considerable problems during the pandemic, which have had a negative effect on their wellbeing. There have been some positives too - the pandemic has placed a spotlight on staff wellbeing, and presented an opportunity to change working systems and increase team-working.

GPs are key to the way the NHS works, and if they continue to face stress and burnout, more GPs could leave the profession, threatening patient care. Our research shows a need to focus on supporting GPs to prevent this and to improve their working lives. We suggest various possibilities for future policy, including encouraging continued wider team working, as seen in the vaccine rollout. This could share workload across practices and improve how services work together. Research on how primary care teams work well could support this.

# Executive Summary

## Study aims

In this research project we aimed to understand the impact of COVID-19 on the wellbeing of GPs, and inform future policy during the recovery period.

Our objectives were to:

- Understand the experiences of GPs during the COVID-19 pandemic, and their intentions for the future;
- Understand more about what helps and hinders GPs in their working lives;
- Explore the experiences and intentions of particular subgroups of GPs to enable comparisons, including:
    - GP partners
    - Late-stage career GPs and retired GPs returning temporarily to practice
    - Newly qualified GPs and GP trainees
    - Groups identified as at increased risk of stress and burnout.

## Background

Before the COVID-19 pandemic, rising demands on UK NHS general practitioners (GPs), including increasing complexity and intensity of work and difficulties in recruitment and retention, led to reports of a service in 'crisis'. Chronic stress and burnout threatens the mental health of GPs and the sustainability of the service. Before the pandemic, 40% of NHS doctors reported psychological and emotional conditions, with GPs in particular experiencing high levels of burnout.

There are clear new risks to workforce wellbeing during the COVID-19 pandemic. GPs have experienced rapid change, risks of infection, remote working and reductions in face-to-face patient care. Some changes, however, could potentially improve their wellbeing, including initial public gratitude, additional financial investment, e-consultations, improved cooperation and support from GPs returning to practice. There have been calls for "urgent action to avoid a vicious cycle of growing shortages, increased pressures on staff and declining quality of care" (King's Fund 2019). Changes resulting from COVID-19 could exacerbate this cycle, but could also break it.

Workforce policy is central to ongoing NHS reforms, and the 2020 GP contract framework(NHS 2020) set out a five-year plan to stabilise general practice and improve GPs' working lives. Insights from this research project will inform future policy developments that could help to enable a 'reset' of primary care, improving workforce wellbeing, resilience and retention.

## Methods

We used a mixed methods approach to explore the impact of the COVID-19 pandemic on GP wellbeing through three connected work-packages. First, we conducted a scoping review of international literature on this topic, using systematic methods of searching and quality appraisal, with a narrative summary of study findings. Next, in a social media analysis we explored longitudinal trends in GP sentiment by examining 91,034 tweets from 185 practising UK NHS GPs on Twitter who had posted before and during the pandemic. To identify emerging themes related to wellbeing, we analysed qualitatively 7145 tweets

related to wellbeing from 200 randomly selected GPs who had posted during the pandemic. Finally, we built on these findings through in-depth qualitative interviews with 40 GPs between March and June 2021.

## Results

### *Pandemic as a catalyst for change*

General practice adapted to entirely new challenges during the pandemic, rapidly changing how consultations were delivered, implementing new technologies and launching triage systems; all while managing evolving guidelines and in a situation of unprecedented uncertainty. Our social media analysis and interviews revealed a sense of pride in the contributions of primary care to the pandemic response, not least to the vaccination programme. Teams have worked together across Primary Care Networks and alongside other public services, and some of our participants reported an increase in camaraderie within practices, alongside increased efforts to support wellbeing.

### *GP psychological wellbeing has been challenged*

We identified a rapidly expanding international evidence base exploring the pandemic's impact on the mental health and wellbeing of GPs, including three studies with UK GPs, two of which were based on small numbers and one limited to one region. In the 35 studies included in our review, common mental health problems were cited by many GPs around the world. This was also revealed in our interviews, and for some, this had led to GPs taking time off work and seeking formal support. In both social media commentaries and interviews, GPs described heightened anxiety relating to personal risk and fear of infecting family members at the beginning of the pandemic, made worse by reported inadequacies of PPE and feeling lower priority than colleagues in secondary care. Similar experiences are reported in the international literature in our review. Increasing patient demand from autumn 2020 onwards has created additional pressures, particularly as patients presented late with missed pathology. GPs also report emotional strain from not always being able to help patients adequately, particularly the increasing numbers seeking support for mental health problems. Our interviewees suggest that different challenges face different groups of GPs. Trainees report feeling isolated at times, and partners faced additional stress from responsibility for the whole practice. International literature in our review reports higher rates of stress, burnout, depression and anxiety amongst women GPs and this was replicated in our interview sample, with women GPs more likely to seek formal support for mental health problems.

### *Wider impacts*

GP interviewees expressed concerns that their wellbeing may be affecting their work, reporting signs characteristic of burnout including becoming more impatient with patients as the day progressed, feeling less sympathetic and worrying about making mistakes. Many participants reported a desire to reduce their clinical hours, either through reduced overall time commitment, or taking on portfolio roles that involve fewer clinical sessions. Others reported plans to retire, work abroad or become locums.

### *Opportunities to support staff wellbeing*

While many of the difficulties faced by general practice are longstanding and perhaps not easily resolved, there are potential opportunities resulting from the pandemic that could support GP wellbeing. GPs have developed skills and experience of remote consultations, which permit some flexibility in working. The benefits of working at scale across Primary Care Networks (PCNs) have been seen in the vaccine delivery programme. These collaborations may offer an opportunity to reduce the burden of staff shortages, presenteeism and associated challenges to wellbeing that were seen in GPs' social media commentaries and discussed by our interviewees. There has also been improved working with hospital specialists, using

remote advice and guidance services, though our interviewees thought that there was scope for more collaboration with secondary care, and a need for hospital doctors to have greater exposure to general practice during their training programmes.

### *Importance of teams and solidarity*

Our findings illustrate the importance of general practitioners working in teams which, when they work well, provided a sense of shared understanding and solidarity during the pandemic. The loss of face-to-face networks and consequent social isolation has apparently led more GPs to communicate openly via social media about their challenges they face, with emergence of virtual networks and an increased focus on GP wellbeing from 2020. Further research could explore team working within and beyond primary care, including the creation of sustainable and supportive networks for GPs, which could potentially improve their wellbeing.

### *Impact of patient perceptions and media portrayal*

GPs reported considerable additional pressures, reduced job satisfaction, anxiety and stress resulting from some patients' perceptions of GPs and the negative media portrayal of practices being 'closed' during the pandemic. GPs on social media and in our interviews called for improved public relations from leadership bodies, to help counteract inaccuracies in the media.

## Conclusions and recommendations for further research

The challenges of the COVID-19 pandemic have added to existing pressures on the GP workforce. While GP mental health and wellbeing is the focus of a growing international evidence base and much UK public debate, our own primary research findings provide the first national insights into GP experiences of the pandemic in England.

Our findings reveal considerable problems affecting the wellbeing of GPs, which may impact more widely on quality of care, staffing and workforce retention. Nevertheless, the pandemic also provided a positive impetus to change working systems and increase team-working, and it has placed a spotlight on staff wellbeing. Through this mixed methods research, we demonstrate a clear need to support GPs and maintain and improve their wellbeing. Possible measures could include continuing the collaborations across wider teams that have been created during the pandemic and vaccine rollout, to inspire a greater sense of belonging and to share workload. Engaging patients and the public in the development of integrated care systems could strengthen communities and reduce negative patient perceptions that many GPs voiced as affecting their wellbeing adversely. The apparent differences in experiences by gender and between GP partners and trainees revealed in our interviews could be explored further to identify means to support these particular groups.

## Dissemination plans

Our systematic review protocol is available publicly through MedRxiv. We have three articles for submission to peer-reviewed journals drafted or in preparation; summarising the review, social media analysis and interviews.

On 4 August 2021 we had a co-production meeting to discuss the findings of this research with patient representatives from our PPI panel. From this we plan to design an infographic and/or video or podcast to disseminate our findings to a public audience. Our steering committee includes individuals from Royal College of General Practitioners, the British Medical Association and national policy makers. We will make

further plans for engagement with professional bodies and policymakers when this group meets in September.

## Expected impact of your work

Throughout this project we have been in regular contact with representatives of the Royal College of General Practitioners (RCGP), and plan to disseminate the findings from this work through RCGP and to national policy makers. We have also engaged with policy makers from NHS England involved in the delivery of the 'Looking After You Too' campaign.

The insights from this research, highlighting the importance of supporting the psychological wellbeing of GPs, will inform future policy developments and the clear renewed focus on staff wellbeing across the NHS. This will include informing the process of GP appraisals, which have a new focus on doctors' health and wellbeing. Our report details the challenges GPs faced during the COVID-19 pandemic, and changes to their working lives which had both positive and negative impacts. We hope that this research will help to enable a 'reset' of primary care, improving GP wellbeing and sustaining the primary care workforce into the future.

# Key findings

1. GP mental health and wellbeing during the COVID-19 pandemic has been the focus of considerable public debate and a growing international evidence base. This report provides the first national insights into GP experiences of the pandemic in England.

2. Over the course of the pandemic, GPs in the NHS and internationally have reported experiencing reduced motivation, loneliness, dissatisfaction with work and frustration in their working lives; for some, this has resulted in more complex mental health issues relating to stress, anxiety and burnout. Some GPs we interviewed (all female) report seeking formal clinical support for mental health problems during the pandemic.

3. While there were key sources of pressure *before* the pandemic affecting GP wellbeing, including workload and staffing issues, general sentiment suggests the pandemic has exacerbated these difficulties. GPs described concerns that their wellbeing may be affecting their work, reporting signs characteristic of burnout including becoming more impatient with patients as the day progressed, less sympathetic and worrying about making mistakes.

4. At the beginning of the pandemic, GPs experienced heightened anxiety relating to personal risk and infecting family members, as well as pressure to change services rapidly; implementing telephone and video consultations, new triage systems, 'hot' sites for potential COVID cases and changing guidelines. GPs describe an unprecedented level of uncertainty at that time.

5. GPs' experiences changed over the course of the pandemic. Stress increased as levels of unmet patient need grew in the UK from the autumn of 2020 onwards. GPs reported unmanageable levels of 'urgent' consultations, concerns about what patient needs and demands lay ahead, and insufficient available support for patients' mental and physical needs. Patients presenting late with missed pathology created additional workload and emotional strain for GPs.

6. GPs reported considerable additional pressures, reduced job satisfaction, anxiety and stress resulting from some patients' perceptions of GPs and the negative UK media portrayal of practices being 'closed' during the pandemic. GPs on social media and in our interviews called for improved public relations from leadership bodies, to help counteract inaccuracies in the media.

7. Some of our interviewees felt that improved health literacy was needed to educate patients on appropriate use of primary care services, alongside a need to improve access to remote methods of consulting. This may be particularly important as the uptake of remote consultations were perceived to be increasing patient demand. While participants suggested patients' abilities to manage their own conditions had improved during the pandemic, GPs suspected there may be multiple motivations for self-management (including fear of infection and, for symptomatic patients, avoiding testing), which suggest this may be short-lived.

8. A perceived lack of *"buffer in the system"* results in presenteeism amongst GPs, who report continuing working when mentally or physically unwell to avoid burdening colleagues. This longstanding problem was exacerbated during the pandemic due to colleagues' self-isolating, shielding, and increased staff absent with mental health problems. Our interviewees suggested that GP partners were more affected by these difficulties owing to greater management and financial responsibilities.

9. The importance of positive teams was emphasised across all three of our sources of information (review, social media and interviews). GPs commented on a greater sense of camaraderie and improved working across Primary Care Networks (PCNs) during the pandemic, particularly over the vaccine rollout. Interviewees also reported improved access to some hospital specialists through remote services such as the NHS England 'Advice and Guidance' service. Nevertheless, there was a sense that hospital colleagues were not aware of the workload pressures experienced in primary care, which was being exacerbated by delays to hospital referrals and increasing complexity of patients managed in primary care. Similar findings are reported internationally; highlighting the importance of teams as a source of support throughout the pandemic to provide shared understanding of anxieties and an opportunity to debrief.

10. Our interviews revealed particular challenges experienced by trainees, who described feeling isolated, lacking support from the wider team, and some difficulties in finding work at the end of their training, as locums had taken up more salaried roles during the pandemic. Exam changes were another source of stress, and trainees feared being redeployed into hospital roles.

11. GPs described various changes they were considering in their working lives to cope with ongoing challenges and maintain their own wellbeing. The most common of these was reducing hours, either in terms of overall working time or by taking on different roles and reducing clinical work. Portfolio careers were seen as an opportunity to achieve greater balance, as well as enabling time for other activities such as training or teaching. Other GPs planned to specialise, take on locum work or work abroad, and three interviewees were planning to retire.

12. Some aspects of the pandemic were viewed as a catalyst for positive change. Our social media analysis and interviews revealed a sense of pride in contributions to the pandemic response and particularly the vaccination programme. Teams have worked together across Primary Care Networks and alongside other public services, and some of our participants reported an increase in camaraderie within practices, alongside increased efforts to support wellbeing.

13. In terms of policy change, our interviewees perceived a need for increased resources in primary care, including staff recruitment and also infrastructure support, for example for Primary Care Network (PCN) leaders' time. Some participants welcomed the inclusion of a wellbeing component in appraisals, and interviewees generally felt that there needed to be greater focus on staff wellbeing, implementing appropriate preventative measures.

# 1. Background

Before the COVID-19 pandemic, the NHS workforce was described as 'in crisis' as a result of staff shortages, fragmented responsibilities and poor workforce planning (King's Fund 2021). Analysis of primary care data suggested a shortage of 2,500 GPs which could increase to 7,000 within five years if current trends continued (King's Fund 2019a). 80% of doctors reported characteristics associated with very high risk of burnout (BMA 2019), with those in general practice and emergency medicine at highest risk (GMC 2019, McKinley et al. 2020) and experiencing high levels of burnout (Orton et al. 2012, Imo 2017). In a 2019 national survey, 39% of GPs reported intending to quit within five years (Gibson et al. 2018). Successive years of the GP Worklife Survey show reducing job satisfaction; GPs recently reported the highest levels of stress since the survey began (Gibson et al. 2015, Gibson et al. 2018). Similar findings have been described internationally (Shanafelt et al. 2012, Kane 2019). Chronic stress and burnout threatens the mental health of GPs, the quality of patient care and the sustainability of the health care system.

Research from earlier epidemics has tended to focus on hospital roles, but it indicates that they have potential to create considerable additional stress and burnout (Maunder et al. 2006). There are clear risks to workforce wellbeing during COVID-19. GPs have experienced rapid change, risks of infection, remote working and reductions in face-to-face patient care. Some changes, however, could potentially improve GPs' wellbeing, including expressed public gratitude (for example through the 'clap for carers'), financial investment, e-consultations, improved cooperation and GPs returning temporarily to practice. There have been recent calls for "urgent action to avoid a vicious cycle of growing shortages, increased pressures on staff and declining quality of care" (King's Fund 2019b). Changes resulting from COVID-19 could exacerbate this cycle, but could also help to break it. Understanding the key sources of stress for GPs during this time is important as we move to a different stage of the pandemic and attempt to learn lessons to protect the future wellbeing of the GP workforce.

Workforce policy is central to ongoing reforms including the Long Term Plan (NHS 2019) and the NHS People Plan (NHS 2020a), and the GP contract framework (NHS 2020b) recently set out a five-year plan to stabilise general practice and improve GPs' working lives. Insights from this research may inform future policy developments, including the implementation of the GP contract and plans to incorporate wellbeing in appraisals (RCGP 2020). This could help to enable a 'reset' of primary care, improving workforce wellbeing, resilience and retention.

# 2. Aims and objectives

This research aims to understand the impact of COVID-19 on the wellbeing of GPs, and inform future policy during the recovery period.

Our objectives are to:

- Understand experiences and intentions of GPs during the COVID-19 pandemic
- Understand more about what particularly helps or hinders GPs in their working lives
- Explore experiences and intentions of particular subgroups of GPs to enable comparisons, including GP partners, late-stage career GPs and retired GPs returning temporarily to practice, newly qualified GPs and GP trainees and groups of GPs identified as at higher risk of stress and burnout.

# 3. Scoping review

## 3.1 Introduction

Internationally, published research tends to focus on the impact of the COVID-19 pandemic on front-line hospital workers. In this review we focus on international evidence exploring the impact of COVID-19 on the mental health and wellbeing of doctors working in general practice, so that future health policy and workplace interventions can be tailored to suit these specific experiences.

The methods used in this review were systematic in nature, following the guidance set out by Cochrane (Higgins et al. 2021). The overview presented in this report provides information about the landscape of evidence on this topic, following the remit of a 'scoping review', but we are preparing a systematic review for later publication.

## 3.2 Methods

### 3.2.1 Search strategy

We searched a range of bibliographic databases (MEDLINE, Embase, PsychINFO, Science Citation Index and Social Science Citation Index) for general practitioner wellbeing during the COVID-19 pandemic. Due to the current nature of the topic we also searched Google Scholar and MedRxiv- a preprint service for research in health (see Table 1 and Appendix A).

No date or language limits were applied at the search stage. A date limit (2019 onwards) was applied once the records were entered into Endnote. Reference lists of included studies were also searched.

Our initial search was on 19th November 2020, updated on 3rd June 2021.

#### *3.2.1.1 Inclusion criteria*

*Type of participants:* Terms relating to general practice and GPs, with consideration for international terminology, for example the use of 'family practice' in the US. We excluded studies including multiple health professional groups that did not present the results for GPs separately.

*Type of exposure:* Studies examining the impact of COVID-19 on GP psychological wellbeing.

*Type of outcome measures:* Measures of psychological wellbeing, stress and burnout, and as secondary outcomes, the impact on factors including absenteeism and workforce retention. We excluded studies exploring infection rates in GPs.

*Study design*: We did not limit searches by design, but only empirical primary research and systematic reviews were eligible for inclusion; editorials and purely descriptive articles were excluded.

### 3.2.2 Selection of studies

We entered the results of each search into an Endnote Library and removed duplicates. Two independent reviewers screened resulting records by using titles and abstracts. Two reviewers (HE, EM, LJ or CH) screened the full text of all studies deemed potentially relevant and any disagreements were resolved by a third reviewer (LJ or SG).

### 3.2.3 Assessment of methodological quality

We assessed the quality of identified reviews using the Joanna Briggs Institute Checklist for Analytical Cross Sectional Studies (Joanna Briggs Institute 2017) and the CASP quality checklist (Critical Appraisal Skills Programme 2018) for observational and qualitative studies. Two researchers (ACA, MT, EM, VM or LJ) independently quality assessed included studies. Any disagreements were resolved by a third reviewer (LJ).

### 3.2.4 Data extraction

Three reviewers (EM, CH and LJ) extracted data, piloting a data extraction form and cross-checking a 20% sample to ensure consistency. We extracted information regarding study design, sample size, sample characteristics, primary and secondary outcomes. We used the PRISMA checklist (Moher et al. 2009) to ensure the transparency of reporting .

### 3.2.5 Data synthesis

Since a variety of study designs were included in this review, with different approaches to collection of outcome measures, we undertook a narrative data synthesis, using NVivo software to manage and sort the data (NVivo 12, QSR International Pty Ltd, 2018). Data did not meet the requirements for statistical pooling of outcomes as vastly differing outcomes were collected across different healthcare settings.

We used a three-step process of thematic qualitative synthesis, as outlined by Thomas and Harden (2008):

1. We entered data from the primary studies into NVivo qualitative analysis software and coded it according to meaning and content.
2. We organised these ‘free codes’ into more descriptive themes, creating a coding structure.
3. We developed analytical themes to describe these more descriptive themes, based on the broad research questions of this review.

This process was iterative, with codes and themes refined and developed throughout the analysis process. The primary coders (LJ and CH) consulted with the wider research team during analysis and thematic development. Since the qualitative studies included in this review reported similar outcomes as those reported in survey designs, we report all study designs together.

## 3.3 Results

### 3.3.1 Description of studies

The PRISMA flow diagram in Figure 1 illustrates the study selection process. In total, across both searches, 2102 studies were retrieved from databases and hand searching, of which there were 759 duplicates. We excluded 1056 studies on the basis of screening the titles and abstracts, resulting in 287 studies for which we retrieved and screened full texts. We contacted the authors of studies to attempt to retrieve further information if insufficient detail was given about the results pertaining to GP participants.

In total, 35 studies were included in this scoping review. Studies were geographically dispersed, with the largest numbers undertaken in Italy (5) and China (4) (see Characteristics of Included Studies table in Appendix B). There were two UK studies included (Trivedi et al. 2020, Taylor et al. 2021), and one study (Wanat et al. 2021) which included UK GPs alongside other countries in their qualitative interview study.

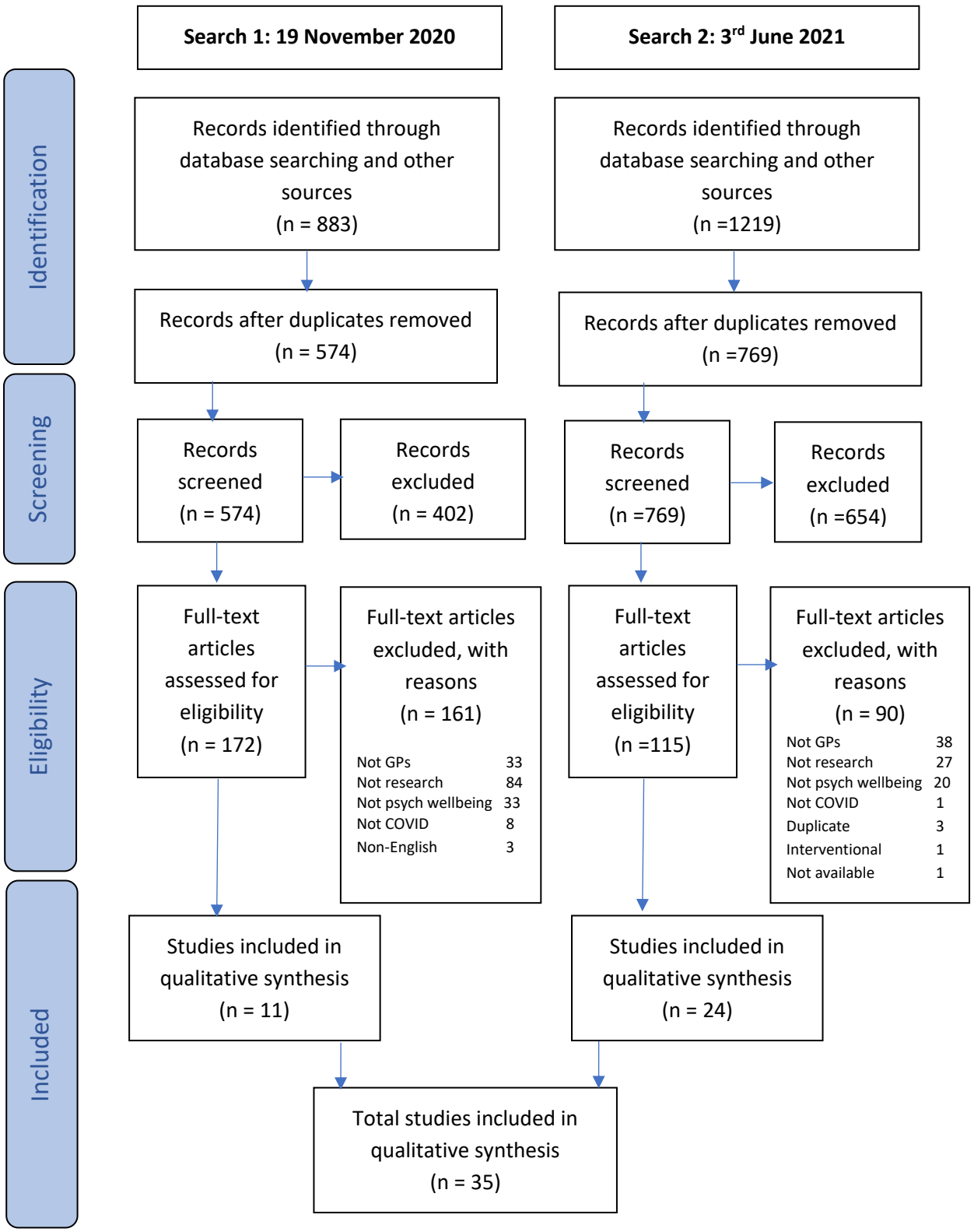
Most studies used a cross-sectional survey design (28) and six adopted qualitative interview methods. Sample sizes ranged from 49 to 1040 participants (median 327) for the survey designs and 12 to 132 for the

qualitative interview studies. Demographic characteristics commonly reported by studies included age and gender, with mixed reporting of other characteristics such as years of experience. Reported average age ranged from 26 to 55. Where age groups were reported we estimated the average age using the midpoint and frequency of the age groups. 27 studies reported sufficient information to calculate the average age of the study population. A pooled analysis (random effects) found the overall mean age to be 42.6 years 95% CI (40.0, 45.2). 29 studies reported the gender of the participants. The reported proportion of males in the studies ranged from 15% to 100%. A pooled analysis (random effects) found the overall percentage of males to be 40.7% 95% CI (34.1, 47.7).

*Table 1: Databases searched and number of records retrieved*

| Database | Interface | First search date | N. records | N. records published 2019 onwards | Second search date | N. records |
|---|---|---|---|---|---|---|
| Embase | OVID | 19/11/2020 | 473 | 396 | 03/06/2021 | 641 |
| Emerging sources | Web of Science | 19/11/2020 | 29 | 27 | 03/06/2021 | 108 (2020 onwards includes 27) |
| Google Scholar | https://scholar.google.com/ | 20/11/2020 | 300 (inc duplicates) 66 (after initial sift) | 62 | 03/06/2021 | 30 |
| MEDLINE | OVID | 19/11/2020 | 223 | 189 | 03/06/2021 | 305 |
| medRxiv | https://www.medrxiv.org/ | 20/11/2020 | 42 | 42 | 03/06/2021 | 36 |
| PsycINFO | OVID | 19/11/2020 | 23 | 15 | 03/06/2021 | 29 |
| Science Citation Index (SCI) | Web of Science | 19/11/2020 | 104 | 97 | 03/06/2021 | 165 (includes original search results of 97) |
| Social Science Citation Index (SSCI) | Web of Science | 19/11/2020 | 55 | 54 | 03/06/2021 | 180 (2020 onwards includes 54) |

*Figure 1: Flow diagram for included studies*



### 3.3.2 Quality Assessment

The quality of included studies was generally good; results of the quality appraisal can be found in Tables 2 and 3. For the purposes of this scoping review, which provides a landscape of the available literature, we included all 35 studies.

#### 3.3.2.1 Quality of cross-sectional surveys

24/29 studies provided some definition of sampling and 27/29 described the study subjects and setting (see Table 2). Further detail could have been useful in a number of instances, for example studies reported age and gender inconsistently and wider characteristics such as experience tended not to be reported. Most studies used objective and validated measures in their surveys, though some also developed measures specifically to answer novel research questions around the impact of COVID-19, which had not been validated owing to the timeframes of conducting these studies. While our quality appraisal of statistical analyses suggested that these were appropriately conducted in all but two studies, there were very few studies that identified confounders and used strategies to deal with these. Four studies did this (Lau et al. 2020, Rossi et al. 2020, Alrawashdeh et al. 2021, Dutour et al. 2021) and one study partly explored confounders (Gokdemir et al. 2020).

#### 3.3.2.2 Quality of qualitative studies

6/7 studies reporting qualitative findings were deemed to provide 'valuable' findings to this topic area using the CASP tool. All studies provided a clear statement of aims and study methodology, and the methods were deemed appropriate to address the aims of the research. All but two studies (Verhoeven et al. 2020, Gomez et al. 2021) used suitable recruitment strategies and all but one study (Verhoeven et al. 2020) collected data appropriately and conducted sufficiently rigorous analysis to address the research question. Verhoeven (2020) used GP trainees to interview their trainers about their experiences, which meant that different researchers undertook each interview (132 in total), leading to potential bias and variation in the information derived from interviews, particularly as the trainees are unlikely to be experienced qualitative interviewers. Furthermore, this study states that only some interviews were recorded, with no explanation for this variation, and the analysis was stopped at 59 interviews, without a full explanation as to how these 59 were selected other than reaching "data sufficiency". No studies described consideration for the effect of the relationship between interviewee and researcher, and this was a significant flaw in Verhoeven et al (2020), given the trainee-trainee relationship. There was some ethical review of all studies, though there was limited discussion as to the issues considered across most of them. One qualitative study, by Xu et al (2020), met quality criteria as set out through the CASP tool, but was limited due to lack of clear information about which type of health professional the quotations related to (since multiple health professional groups were included). We were able to obtain this information from the study authors.

*Table 2: Quality Appraisal of cross-sectional surveys using the JBI tool. Questions 3 and 4 on the JBI were not applicable and are excluded here.*

| Author, year | 1. Were the criteria for inclusion in the sample clearly defined? | 2. Were the study subjects and the setting described in detail? | 5. Were confounding factors identified? | 6. Were strategies to deal with confounding factors stated? | 7. Were the outcomes measured in a valid and reliable way? | 8. Was appropriate statistical analysis used? |
|---|---|---|---|---|---|---|
| Amerio et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Alrawashdeh et al, 2020 | Yes | Yes | Yes | Yes | Yes | Yes |
| Baptista et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Castelli et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Di Monti et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Dutour et al, 2020 | Yes | Yes | Yes | Yes | Yes | Yes |
| Filfilan et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Gold et al, 2020 | Yes | No | No | No | Unclear | Yes |
| Gokdemir et al, 2020 | No | Yes | Partly | Partly | Yes | Yes |
| Hilbert et al, 2020 | Yes | Yes | No | No | No | No |
| Jahan et al, 2020 | No | Yes | No | No | Yes | Yes |
| Lange et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Lau et al, 2020 | Yes | Yes | Yes | Yes | Unclear | Yes |
| Lau et al, 2021 | Yes | Yes | No | No | No | Yes |
| Lee, et al 2020 | Yes | Yes | No | No | Yes | Yes |
| Moussa et al, 2020 | No | Yes | No | No | Unclear | No |
| Ortega-Galán et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Monterrosa-Castro et al, 2020b | Yes | Yes | No | No | Partly | Yes |
| Monterrosa-Castro et al, 2020a | Yes | Yes | No | No | Yes | Yes |
| Rossi et al, 2020 | Yes | Yes | Yes | Yes | Yes | Yes |
| Sitanggang et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Sotomayor-Castillo et al, 2020 | Yes | No | No | No | No | Yes |
| Stafie et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Tas et al, 2020 | Yes | yes | No | No | Partly | Yes |
| Trivedi et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Tse et al, 2020 | No | Yes | No | No | Yes | Yes |
| Toselli et al, 2020 | No | Yes | No | No | Unclear | Yes |
| Vilovic et al, 2020 | Yes | Yes | No | No | Yes | Yes |
| Zeng et al, 2020 | Yes | Yes | No | No | Yes | Yes |

*Table 3: Quality appraisal of qualitative studies using the CASP tool*

| Author, year | Section A: Are the results valid? | | | | | | Section B: What are the results? | | | Section C: Will the results help locally? |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1. Was there a clear statement of the aims of the research? | 2. Is a qualitative methodology appropriate? | 3. Was the research design appropriate to address the aims of the research? | 4. Was the recruitment strategy appropriate to the aims of the research? | 5. Was the data collected in a way that addressed the research issue? | 6. Has the relationship between researcher and participants been adequately considered? | 7. Have ethical issues been taken into consideration? | 8. Was the data analysis sufficiently rigorous? | 9. Is there a clear statement of findings? | 10. How valuable is the research? |
| Alrawashdeh et al, 2020 | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Valuable |
| Gomez et al, 2020 | Yes | Yes | Yes | No | Yes | No | Yes | Yes | Yes | Valuable |
| Taylor et al, 2020 | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Valuable |
| Verhoeven et al, 2020 | Yes | Yes | Yes | No | Partly | No | Yes | No | Yes | Limited |
| Wanat et al, 2020 | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Yes | Valuable |
| Xu et al, 2020 | Yes | Yes | Yes | Yes | Yes | No | Yes | Yes | Partly | Valuable |
| Yin et al, 2020 | Yes | Yes | Unclear | Yes | Yes | No | Yes | Yes | Yes | Valuable |

### 3.3.3 Thematic findings

We present the findings of the scoping review here; providing an overview of the available evidence by narrative theme. Study findings related to two overarching categories that were used to sort the data: 1) stressors and moderators and 2) outcomes (further categorised as relating to either mental wellbeing, physical wellbeing or future intentions). These are summarised briefly below and in Table 4.

#### 3.3.3.1 Stressors and moderators

Sources or moderators of stress were described across a wide number of studies which conceptualised them differently. We summarised these moderators of GPs' stress during COVID-19 narratively using the following themes: changed nature and quantity of GP work, Personal Protective Equipment (PPE), information seeking or use, exposure to COVID, inter-disciplinary communication, organisational and national preparedness and support.

##### *3.3.3.1.1 Changed nature and quantity of GP work*

Eighteen studies described a sudden and considerable changes that took place in general practice internationally, including a movement towards remote consultations and triage, either by telephone, video or email. GPs report a rise in workload due to increased use of phone calls, adaptations to practice and rapidly changing guidelines, while other studies described a reduction in workload from face-to-face consultations.

##### *3.3.3.1.2 PPE*

14 studies explored experiences of PPE and risk; the majority which report inadequacies in provision. Conversely, a study from Singapore (Lau et al. 2020) explored the preparedness for the pandemic, including PPE training and support, with a high majority of participants perceiving adequate PPE training and support in how to use it (88.6% and 86.1% respectively).

The relationship between PPE and mental health outcomes was also explored in studies, with findings highlighting the impact of inadequate PPE on depression and work-stress (Amerio et al. 2020, Lau et al. 2020, Lau et al. 2021).

##### *3.3.3.1.3 Support*

11 studies described sources of support GPs used to cope during the pandemic. GPs reported positive experiences and feelings of social support, but were less positive with regards to the support received from state organisations or employers.

##### *3.3.3.1.4 Information seeking or use*

Information seeking or use was reported in 11 studies and related to time spent information-seeking, perceptions of being overwhelmed by levels of information and level of knowledge. GPs reported varied sources of information including health authorities, academic journals, national medical organisations, social media, public research institutions and news broadcasting. Studies report difficulties in information assimilation as guidelines were frequently modified and sources were, at times, conflicting (Verhoeven et al. 2020, Dutour et al. 2021).

Studies reported associations between information seeking and information overload and mental wellbeing (e.g. (Amerio et al. 2020, Dutour et al. 2021). Meanwhile, Lau (2020) describe reading about COVID-19 as one of the most commonly cited coping strategies for participants in Singapore.

#### *3.3.3.1.5 Exposure to COVID*

We excluded studies that *only* explored health professional infection rates or detection of COVID-19 antibodies, but nine eligible studies attempted to quantify the level of exposure to COVID-19 amongst GPs alongside other psychological outcomes. Exposure was measured as either through contracting COVID-19 (8.1% of Leicestershire GPs had contracted COVID 19 at the time of surveying in August 2020 (Trivedi et al. 2020)), presenting with symptoms (38.4% Colombian GPs had symptoms (Monterrosa-Castro et al. 2020)) or being in contact with COVID-positive patients (Amerio et al. 2020, Hilbert et al. 2020, Ta et al. 2020, Baptista et al. 2021, Lau et al. 2021, Sitanggang et al. 2021). Exposure was associated with symptoms of depression (Amerio et al. 2020) and higher general anxiety (Monterrosa-Castro et al. 2020).

#### *3.3.3.1.6 Inter-disciplinary communication*

Four studies reported findings relating to changes in the communication between primary and other healthcare sectors. Three studies (Xu et al. 2020, Dutour et al. 2021, Toselli et al. 2021) reported lack of communication and cohesion across sectors. One study, though with some methodological limitations previously described (Verhoeven et al. 2020), reported greater access to specialists and an increased sense of solidarity and inter-disciplinary working during the pandemic.

#### *3.3.3.1.7 Organisational and national preparedness for the pandemic*

Nine studies examined GPs' views around organisational or national preparedness for the pandemic, reporting differing findings across these different geographical locations. In the UK, GPs' perceptions around preparedness for the second wave were explored (Trivedi et al. 2020); approximately two thirds (62.2%, n=69) of GPs felt the preparation was 'good' or 'excellent.' It is not clear, though, exactly what this study refers to in terms of preparation, as this may encompass preparation by individual GPs, GP practices, PCNs or national organisations. Monterrosa-Castro (2020) report that only 22.9% GPs felt protected by the state or employer and also that there was a relationship between perceptions of preparedness and sufficiency of government measures and symptoms of anxiety. High levels of a sense of GPs' preparedness was reported in Australia (Sotomayor-Castillo et al. 2021), Singapore (Lau et al. 2021) and China (Tse et al. 2020, Zeng et al. 2021) and Zeng (2021) found this reduced psychological stress.

### 3.3.3.2 Outcomes

Outcomes are described using the themes mental wellbeing (31/35 studies), physical wellbeing (10/35 studies) and future intentions (4/35 studies).

#### *3.3.3.2.1 Mental wellbeing*

Different facets of mental wellbeing were explored across studies. We summarise these findings narratively below under the categories: stress, burnout, depressive symptoms, anxiety and fear and job satisfaction.

##### Stress

Stress was measured by eleven studies through a variety of means. The Perceived Stress Score (PSS) was most commonly used (8/11 studies: (Gokdemir et al. 2020, Lee et al. 2020, Ortega-Galan et al. 2020, Rossi et al. 2020, Trivedi et al. 2020, Dutour et al. 2021, Lange et al. 2021, Vilovic et al. 2021). However, Rossi (2020) presents pooled results across multiple health professional groups and while Gokdemir (2020) suggest they measured PSS in their survey across multiple countries, no results are reported for this outcome. PSS scores place GPs in all studies and all countries into the 'stressed' category. Lange (2021) and Ortega Galan (2020) studied mixed groups of healthcare workers and report the highest levels of personal perceived stress in primary care doctors and higher levels of compassion fatigue than other professionals

(2021). Trivedi (2020) report an increased PSS score in English GPs during the first wave of the pandemic, though this relied on GPs retrospective recall of stress levels prior to the pandemic.

Seven studies quantified work related stress, employing different measures (Filfilan et al. 2020, Monterrosa-Castro et al. 2020, Ta et al. 2020, Sitanggang et al. 2021, Stafie et al. 2021, Vilovic et al. 2021, Zeng et al. 2021). Sittanggang (2021) and Jahan (2021) used the standard depression and anxiety scale (DASS-21). Jahan (2021) report moderate to severe stress in 9.5% of primary care doctors, while Sittanggang (2021) report stress in 11% of GPs.

Five studies found gender was statistically significantly associated with stress levels, with women GPs reporting higher levels of stress compared to men (Ortega-Galan et al. 2020, Dutour et al. 2021, Lange et al. 2021, Stafie et al. 2021, Vilovic et al. 2021). Three studies showed age had a correlation with high stress, with higher levels in older age groups (Filfilan et al. 2020, Vilovic et al. 2021, Zeng et al. 2021).

Other significant elements associated with stress were; perceived increased personal risk from COVID-19 (Sitanggang et al. 2021, Stafie et al. 2021, Vilovic et al. 2021, Zeng et al. 2021) and concerns around infecting family or people at home (Lau et al. 2021, Stafie et al. 2021). Increases in workload and longer hours were also significant (Sitanggang et al. 2021, Yin et al. 2021), daily pressure of isolation due to COVID -19 restrictions (Stafie et al. 2021) and self-reported health status (Filfilan et al. 2020). Factors that reduced stress were; having PPE, infection prevention measures, no infections in colleagues, loved ones not infected and confidence in colleagues to cover their work.

### Burnout

Five studies quantified burnout, albeit using different measures (Di Monte et al. 2020, Ortega-Galan et al. 2020, Baptista et al. 2021, Lange et al. 2021, Stafie et al. 2021). Baptista et al (2021) used the Copenhagen Burnout Inventory to report high levels of burnout in three dimensions; personal burnout (65.9%), work related burnout (68.7%), patient related burnout (54.7%). Lange et al (2021) used the Maslach burnout inventory and report high burnout symptoms across the emotional exhaustion, depersonalisation and personal accomplishment scales of 24.46%, 42.41% and 5.26% respectively. Ortega-Galan et al (2020) explored professional quality of life using the ProQoL scale which contains subscales compassion fatigue, compassion satisfaction, and burnout. Across various health worker roles and specialties, primary care doctors reported lower compassion satisfaction ($P<0.01$) and higher compassion fatigue ($P<0.01$ compared to nurses and $p=0.031$ compared to technicians).

Three studies report a relationship between burnout and female gender (Baptista et al. 2021, Lange et al. 2021, Stafie et al. 2021). Increased length of time working as a doctor was also statistically significantly related to higher patient-related burnout, as was higher levels of depression and anxiety (Baptista et al. 2021).

### Depressive symptoms, anxiety and fear

13 studies explored depression and anxiety symptoms using different measures, including the DASS, HADS, PHQ-9 and GAD-7 scales (Amerio et al. 2020, Hilbert et al. 2020, Monterrosa-Castro et al. 2020, Ta et al. 2020, Trivedi et al. 2020, Tse et al. 2020, Baptista et al. 2021, Castelli et al. 2021, Jahan et al. 2021, Lange et al. 2021, Monterrosa-Castro et al. 2021, Sitanggang et al. 2021, Vilovic et al. 2021). The variations in measures used and healthcare settings makes it difficult to draw comparisons and precluded the use of meta-analyses. Rates of anxiety ranged from 20% in Indonesia (Sitanggang et al. 2021) to 95% in Turkey and Colombia (Ta et al. 2020, Monterrosa-Castro et al. 2021). Symptoms of depression were reported to a

lesser extent, and ranged from 13% in Indonesia (Sitanggang et al. 2021) to 37% in Italy (Castelli et al. 2021).

Anxiety was related to fear of risk of infection (for GPs and their family members), disappointment at work, considering leaving medicine, uncertainty about future COVID waves and levels of unmet need in the community. Qualitative free-text comments in a survey of English GPs in August 2020 suggest that anxiety levels may be related to to uncertainty and expectations of increased pressures during the winter months (Trivedi, 2020).

Anxiety was found to be correlated with age and gender in Colombian GPs (lower mean age ($p=0.03$) and a higher proportion of women ($p<0.001$) were correlated with higher anxiety (Monterrosa-Castro et al. 2020)). Vilovic (2021) report higher depression in women (24.6%) compared with men (12.3%). Meanwhile, Baptista (2021) report greater levels of depression for doctors under 40, but little difference between genders measuring moderate -severe on DASS -21 scale with women (28.4%) and men (24.7%). Other factors that raised anxiety were the perceived risk to family and friends and level of confidence in managing COVID (Tse et al. 2020, Vilovic et al. 2021).

Eight studies reported fear associated with COVID infection (Gokdemir et al. 2020, Lau et al. 2020, Monterrosa-Castro et al. 2020, Verhoeven et al. 2020, Sitanggang et al. 2021, Sotomayor-Castillo et al. 2021, Toselli et al. 2021, Zeng et al. 2021).

#### Post-traumatic stress disorder

Four studies assessed post-traumatic stress disorder (PTSD) amongst GPs. In a survey of different stakeholders in Italy, Rossi et al (2020) explored health workers' post-traumatic stress symptoms, finding that GPs were more likely to report PTSD symptoms than other health care workers ($p=0.04$). Two studies used the impact of event scale to assess levels of PTSD and both studies report women scored higher on the scale than men (Lange et al. 2021, Vilovic et al. 2021). Lange (2021) report PTSD symptoms in 10.59% of GPs in France, while Vilovic (2021) report twice as many women than men had moderate and severe PTSD (41% vs 22%). Castelli (2021) used a PTSD Checklist and report 32% of the GPs surveyed presented with significant PTSS.

#### Job satisfaction

Job satisfaction was explored in two studies. In a qualitative study of GP's experiences of long COVID symptoms, Taylor (2021) found doctors felt upset and angry they were expected to work in the face of an unknown risk of infection and disappointed that they were not supported by doctors afterwards. Alrawashdeh et al (2021) report lower job satisfaction amongst general practitioners than other physician groups in their mixed-specialty sample ($p<0.001$). This study also explores burnout, but the results for GPs are not presented separately to other physician groups so are not included here.

#### *3.3.3.2.2 Physical wellbeing*

10 studies reported the impact of COVID-19 on physical symptoms and general quality of life (Amerio et al. 2020, Lau et al. 2020, Monterrosa-Castro et al. 2020, Moussa et al. 2020, Ta et al. 2020, Castelli et al. 2021, Sotomayor-Castillo et al. 2021, Taylor et al. 2021, Yin et al. 2021, Zeng et al. 2021). GPs reported experiencing migraines and headaches, tiredness and exhaustion and increased eating, drinking or smoking (Monterrosa-Castro et al. 2020, Monterrosa-Castro et al. 2021, Yin et al. 2021) and increased reporting of sleep disorders (Ta et al. 2020, Zeng et al. 2021). Some Italian GPs reported signs of insomnia, and this was correlated with moderate or severe symptoms of depression (Amerio et al. 2020). One UK study looked at

GPs experiences of long COVID (Taylor et al. 2021) using qualitative interview methods. Taylor et al report distress amongst GPs with long COVID as they felt 'let down' and expressed frustration at the lack of support and recognition for symptoms of long COVID (Taylor et al. 2021). They also described an internal debate over the origin of symptoms as physical or psychological (Taylor et al. 2021).

#### *3.3.3.2.3 Future Intentions*

Four studies explored GPs views around intentions to remain in medicine (Lau et al. 2020, Monterrosa-Castro et al. 2020, Dutour et al. 2021, Yin et al. 2021). Both Lau (2020) and Dutour (2021) report that 7% GPs in their studies were willing to leave practice. Monterrosa-Castro (2020) found a relationship between symptoms of anxiety and considering leaving medicine in order to protect family members ($p<0.05$). In a small qualitative sample of 11, Yin et al (2021) report that one GP chose to change speciality during the pandemic.

## 3.4 Summary

We identified 35 studies in our review that explored, to some degree, GP wellbeing during the COVID-19 pandemic, but there was little evidence from a UK setting. The UK evidence that we identified comprised three studies, one undertaken in one geographical area (Trivedi et al. 2020), one focused on GP's experiences of long-COVID (Taylor et al. 2021), and one is intermixed with international evidence from different settings (Wanat et al. 2021).

There were limitations in reporting across studies, for example the results pertaining to doctors working in general practice were often not disentangled from other health professionals and settings; the pool of research would have been even larger if this had been done. Quality of the evidence was generally good, though there are four examples of particular issues in reporting and conduct that would exclude these studies from systematic review synthesis. Many studies also did not consider confounders or describe how they adjusted for these in their analyses.

Nevertheless, there are some key findings that are replicated across studies and countries. GPs were subject to multiple sources of stress during the pandemic, including risk and inadequate PPE, information seeking and use of rapidly evolving guidelines, changed working practices, and difficulties in interdisciplinary working. Studies that sought to explore the impact of these factors on mental health suggest GPs experienced stress, burnout, anxiety, depression, fear of COVID and physical symptoms.

Gender differences in experiences of men and women doctors were reported internationally in relation to all facets of psychological wellbeing: women GPs reported statistically significantly higher rates of stress, burnout, anxiety, depression and PTSD across different settings. This variation warrants further exploration to explore the reasons behind these gender differences and identify potential solutions to better support female GPs. Increasing age was also associated with higher rates of reported stress.

The design of the studies was cross-sectional survey designs or qualitative studies, rather than being longitudinal in nature, so there is no baseline from which to assess the impact of the pandemic; studies rely on participants' retrospective judgement, which may be flawed.

*Table 4: Summary of thematic findings by number of studies and country.*

| | | |
|---|---|---|
| **STRESSORS** | | |
| **Changed nature of GP work** | 18 studies (1 Saudi Arabia, 1 Germany, 1 Italy 2 Singapore, 1 Turkey, 1 UK, 4 China, 1 Belgium, 1 France, 2 USA, 1 Qatar, 1 Various, 1 Australia) | (Filfilan et al. 2020, Hilbert et al. 2020, Lau et al. 2020, Moussa et al. 2020, Ta et al. 2020, Trivedi et al. 2020, Tse et al. 2020, Verhoeven et al. 2020, Xu et al. 2020, Dutour et al. 2021, Gold et al. 2021, Gomez et al. 2021, Lau et al. 2021, Sotomayor-Castillo et al. 2021, Toselli et al. 2021, Wanat et al. 2021, Yin et al. 2021, Zeng et al. 2021) |
| **PPE and risk** | 14 studies (3 Italy, 1 Belgium, 1 Germany, 1 Singapore, 1 Turkey, 1 UK, 1 China, 1 Australia, 1 Croatia, 1 Portugal, 1 France, 1 various) | (Amerio et al. 2020, Hilbert et al. 2020, Lau et al. 2020, Ta et al. 2020, Trivedi et al. 2020, Verhoeven et al. 2020, Baptista et al. 2021, Castelli et al. 2021, Dutour et al. 2021, Sotomayor-Castillo et al. 2021, Toselli et al. 2021, Vilovic et al. 2021, Wanat et al. 2021, Zeng et al. 2021) |
| **Support** | 11 studies (2 Singapore, 2 China, 1 Colombia, 1 Turkey, 1 France, 1 Australia, 1 UK, 1 Oman, 1 various) | (Lau et al. 2020, Monterrosa-Castro et al. 2020, Ta et al. 2020, Xu et al. 2020, Dutour et al. 2021, Jahan et al. 2021, Lau et al. 2021, Sotomayor-Castillo et al. 2021, Taylor et al. 2021, Wanat et al. 2021, Zeng et al. 2021) |
| **Information seeking or use** | 11 studies (2 Italy, 1 Belgium, 2 Singapore, 1 Turkey, 1 China, 1 France, 1 Australia, 1 Croatia, 1 various) | (Amerio et al. 2020, Lau et al. 2020, Ta et al. 2020, Verhoeven et al. 2020, Xu et al. 2020, Castelli et al. 2021, Dutour et al. 2021, Lau et al. 2021, Sotomayor-Castillo et al. 2021, Vilovic et al. 2021, Wanat et al. 2021) |
| **Exposure to COVID-19** | 9 studies (2 Italy, 1 Germany, 2 Singapore, 1 Indonesia, 1 Colombia, 1 Turkey, 1 UK) | (Amerio et al. 2020, Hilbert et al. 2020, Lau et al. 2020, Monterrosa-Castro et al. 2020, Ta et al. 2020, Trivedi et al. 2020, Baptista et al. 2021, Lau et al. 2021, Sitanggang et al. 2021) |
| **Organisational and national preparedness** | 10 studies (2 Singapore, 1 Belgium, 1 Colombia, 1 UK, 1 France, 3 China, 1 Australia) | (Lau et al. 2020, Monterrosa-Castro et al. 2020, Trivedi et al. 2020, Tse et al. 2020, Verhoeven et al. 2020, Dutour et al. 2021, Lau et al. 2021, Sotomayor-Castillo et al. 2021, Yin et al. 2021, Zeng et al. 2021) |
| **Inter-disciplinary communication** | 4 studies (1 China, 1 Belgium, 1 Italy, 1 France) | (Verhoeven et al. 2020, Xu et al. 2020, Dutour et al. 2021, Toselli et al. 2021) |
| **OUTCOMES** | | |
| **Stress, burnout and resilience** | 20 studies (2 Italy, 1 Saudi, 3 Singapore, 1 Colombia, 1 Spain, 1 Turkey, 1 UK, 1 Jordan, 1 Portugal, 2 France, 1 Indonesia, 1 Romania, 1 Croatia, 2 China, 1 Oman) | (Di Monte et al. 2020, Filfilan et al. 2020, Lau et al. 2020, Lee et al. 2020, Monterrosa-Castro et al. 2020, Ortega-Galan et al. 2020, Rossi et al. 2020, Ta et al. 2020, Trivedi et al. 2020, Alrawashdeh et al. 2021, |

| | | |
|---|---|---|
| | | Baptista et al. 2021, Dutour et al. 2021, Jahan et al. 2021, Lange et al. 2021, Lau et al. 2021, Sitanggang et al. 2021, Stafie et al. 2021, Vilovic et al. 2021, Yin et al. 2021, Zeng et al. 2021) |
| **Depressive symptoms and anxiety** | 13 studies (2 Italy, 1 Germany, 2 Colombia, 1 Turkey, 1 UK, 1 China, 1 Portugal, 1 Oman, 1 France, 1 Indonesia, 1 Croatia) | (Amerio et al. 2020, Hilbert et al. 2020, Monterrosa-Castro et al. 2020, Ta et al. 2020, Trivedi et al. 2020, Tse et al. 2020, Baptista et al. 2021, Castelli et al. 2021, Jahan et al. 2021, Lange et al. 2021, Monterrosa-Castro et al. 2021, Sitanggang et al. 2021, Vilovic et al. 2021) |
| **Fear of COVID** | 8 studies (1 various, 1 Singapore, 1 Colombia, 1 Belgium, 1 Indonesia, 1 Italy, 1 Australia, 1 China) | (Gokdemir et al. 2020, Lau et al. 2020, Monterrosa-Castro et al. 2020, Verhoeven et al. 2020, Sitanggang et al. 2021, Sotomayor-Castillo et al. 2021, Toselli et al. 2021, Zeng et al. 2021) |
| **PTSD** | 4 studies (2 Italy, 1 France, 1 Croatia) | (Rossi et al. 2020, Castelli et al. 2021, Lange et al. 2021, Vilovic et al. 2021) |
| **Job Satisfaction** | 2 studies (1 Jordan, 1 UK) | (Alrawashdeh et al. 2021, Taylor et al. 2021) |
| **Physical wellbeing and general quality of life** | 10 studies (2 Italy, 1 Singapore, 1 Colombia, 1 Qatar, 1 Turkey, 1 Australia, 1 UK, 2 China) | (Amerio et al. 2020, Lau et al. 2020, Monterrosa-Castro et al. 2020, Moussa et al. 2020, Ta et al. 2020, Castelli et al. 2021, Sotomayor-Castillo et al. 2021, Taylor et al. 2021, Yin et al. 2021, Zeng et al. 2021) |
| **Future intentions** | 4 studies (1 Singapore, 1 Colombia, 1 France, 1 China) | (Lau et al. 2020, Monterrosa-Castro et al. 2020, Dutour et al. 2021, Yin et al. 2021) |

# 4. Social Media Analysis

## 4.1 Introduction

Increasing numbers of health care professionals are using social media as a means to share personal views and experiences, as well as sharing and debating scientific information. GPs' social media accounts provide a useful tool for measuring this social commentary and gauging their views. Social media use by health professionals has become increasingly widespread, with nearly 90% of health care workers in the US stating that they use social media (Von Muhlen 2012, George 2013, George 2013). Health care professionals currently use a broad range of social media platforms; Twitter is one of the most common types of social media platform (Antheunis 2013, Rolls 2016, Chan 2018). Previous research has demonstrated that doctors are quick to use Twitter as a dissemination tool and platform on which to discuss current issues pertinent to their work informally and to communicate with colleagues (Antheunis 2013). A Twitter study on US physicians' experience of COVID-19 found that health care professionals typically discussed different issues from the overall general public discourse, with a greater focus on issues related to COVID-19 and their work practices (Sullivan 2021).

Analysis of Twitter posts is used commonly to identify public experiences and opinions, including recently on COVID-19 and its impact (Skalski et al. 2017, Dyer et al. 2020, Guntuku et al. 2020, Huang et al. 2020, Karami et al. 2020, Koh et al. 2020, Lee et al. 2020, Lwin et al. 2020, Rao et al. 2020, Su et al. 2020, Valdez et al. 2020, Alomari et al. 2021, Babvey et al. 2021, Gao et al. 2021, Osakwe et al. 2021). Medical professionals' opinions about COVID-19 have been studied using social media (Wahbeh et al. 2020). Our literature search (section 1) found no studies to date examining GP wellbeing using social media monitoring.

Our scoping review reports high levels of stress and burnout, with a rapidly expanding literature on this topic (e.g. (Dutour et al. 2021, Lange et al. 2021, Lum et al. 2021), but a study of a national sample of UK GP experiences during the pandemic is needed.

## 4.2 Methods

We used two approaches to analysing GPs' Twitter posts. First, we sought to explore trends in pre and post COVID sentiment using a longitudinal analysis of GPs' tweet content (January 2019 to February 2021). Second, an in-depth qualitative analysis explored themes emerging from GP tweets during the pandemic (February 2020 to February 2021) with a particular focus on GP wellbeing. This analysis was inductive in nature, and as such we did not seek to confirm or refute an existing hypothesis, but rather to explore emerging themes relating to the impact of the pandemic on GP wellbeing.

### 4.2.1 Data collection

Professor Mike Thelwall (University of Warwick and founder of the Mosdeh software used in this analysis) shared Twitter profiles of users who tweeted on COVID-19 from 10 March 2020 to October 2020. We limited profiles to those with a self-reported UK location and 'Dr' or 'Doctor' in their username (5,512 users and 223 users, respectively) or biographical description (850 users and 3,885 users). We then used the biographical descriptions to select GPs manually, excluding non-NHS GPs, retired GPs and practice or organisation accounts. This identified 293 individual practising UK NHS GPs. We supplemented these by searching for 'NHS GP' as a phrase in the Twitter Advanced Search facility (https://twitter.com/search-

advanced?lang=en) and then selecting 'people' in the search results. This identified a further 88 Twitter users after removing duplicates. The resulting sample included 381 UK NHS GPs.

To explore the representativeness of our sample, we collated available demographic data, such as gender and race (categorised as black, white or Asian), geographical location, and type of GP (such as GP partner or GP trainee).

The longitudinal analysis included 185 GPs from the total 381 sample, representing those for whom we could obtain continuous tweets from 1st January 2019 to February 2021. This number was a subset due to a number of factors. There is a Twitter download limit of 3200 tweets per user which prevented access to tweets back to January 2019 for very high users. In addition, some GPs joined after January 2019, had an extended break from Twitter, or changed their account to private.

For the qualitative analysis SG randomly selected 200 GPs from the total 381 who posted tweets from February 2020. The selection process generated variation in demographics and posts, whilst enabling data saturation with no new themes emerging. Of these 200 GPs, 196 had timelines containing data relevant to GP wellbeing and were included in our analysis.

For both analyses we excluded non-English tweets, retweets, and duplicate tweets.

### 4.2.2 Analysis

The longitudinal analysis analysed trends over time in #hashtags, @handles/usernames, words used and key themes. The number of occurrences may disproportionately reflect use by a few prolific GPs, therefore, we also recorded mentions by the overall number of GPs.

In the qualitative analysis we pursued a more in-depth manual content analysis exploring emerging themes during the pandemic. Content analysis involves coding sets of texts (tweets) into multiple relevant categories (Skalski et al. 2017). It is one of the most common methods for studying information obtained from social media (Wang et al. 2019) and is appropriate for identifying prevalence (Skalski et al. 2017). We used an inductive approach as we were not testing an existing theory and had no prior framework.

To answer our research questions fully, data immersion was essential. Following data familiarisation and immersion, a coding framework and annotation guide was developed by SG, then discussed and refined through multiple iterations with the study team (SG, LJ, EM, HE, CH and AC). Tweets were hand-coded as this is still the gold standard form of analysis (Kim et al. 2013). To avoid over-interpretation of these short tweets, we coded only what was explicitly stated. We tested for coding consistency to increase the dependability of the findings by independently double coding 10% of tweets. Level of agreement was high, with 1.2% (11/915) of codes changed and three additional codes added. Remaining codes were checked by the second reviewer during the coding categorisation process, rather than independently assigned.

## 4.3 Results

### 4.3.1 Sample demographics

Our sample reflects the GP population in terms of broad ethnic group, but over-represents men (Table 5). GPs were located throughout the UK, with a slight over-representation from London. The majority (81%) did not indicate what GP role they held. Of those that did, most were GP Partners or GP Trainees/Registrars. Age was reported by less than 5% of GPs.

*Table 5: GP Demographics (Gender, Race and Country)*

| | Male | Female | Unknown | White | Asian | Black | Unknown | England | Scotland | Wales | NI | Unknown UK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Longitudinal Study (n=185) | 58% (107/185) | 42% (77/185) | 0.5% (1/185) | 64%, (118/185) | 30% (55/185) | 4% (7/185) | 3% (5/185) | 75% (138/185) (35 from London) | 6% (11/185) | 4% (8/185) | 2% (3/185) | 14% (25/185) |
| Qualitative Study (n=196) | 56% (109/196) | 43% (85/196) | 1% (2/196) | 61% (119/196) | 32% (63/196) | 6% (11/196) | 2% (3/185) | 77% (150/196) (36 from London) | 7% (13/196) | 5% (9/196) | 1% (2/196) | 11% (22/196) |
| GP population (Headcount) * | 43% | 56% | 1% | 51% | 23% | 4% | 19% | 82% | 9% | 6% | 3% | - |

** gender and ethnicity is for England.*

Source: NHS Digital (2021), Government Wales (2020), Public Health Scotland (2020), Northern Ireland Health and Social Care Board (2021)

### 4.3.2 Analysis 1: Longitudinal Trends January 2019 to February 2021

#### *Tweet volume (91,034 tweets from 185 GPs)*

The number of tweets increased dramatically a few days before the first UK lockdown (20th March 2020) and stayed high until the end of April 2020 (Figure 2). The next largest peaks were around the time of the Royal College of General Practitioners (RCGP) Annual Conference (24th-25th October 2019) and the US presidential election results (November 2020). Other smaller peaks reflected polling day (12th December 2019), a GP conference "DGPLondon20" (29th February 2020), announcement of the second lockdown (31st October 2020), the first vaccine efficacy results (12th November 2020), and the COVID-19 vaccine roll-out (January 2021).

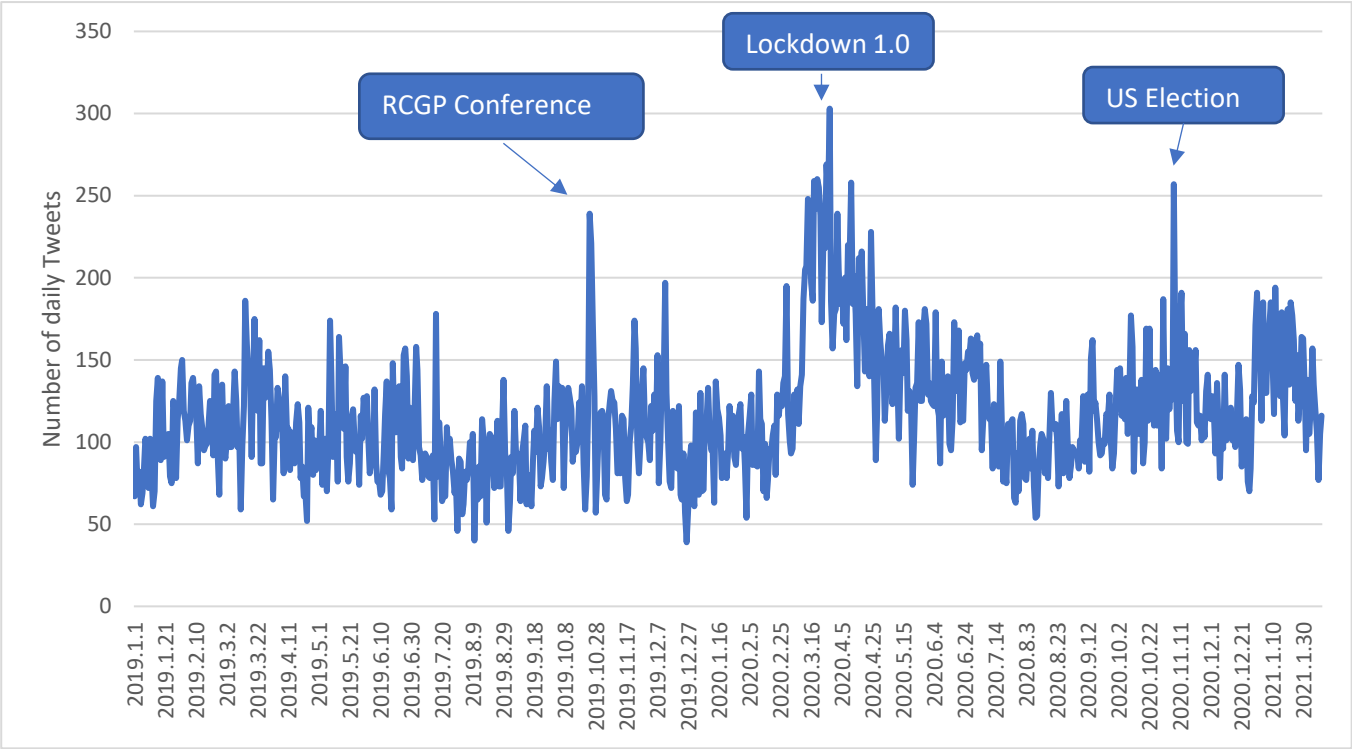



Figure 2: Total number of daily Tweets from 185 GPs

*Hashtags (11,950 unique hashtags mentioned 34,372 times)*

In addition to hashtags related to the NHS and primary care, which dominate GPs' tweets throughout the time period, those related to Brexit dominated in 2019, to COVID-19 dominated in 2020 and COVID-19 vaccines in 2021 (Supplementary Table 1). Many new COVID-19 hashtags emerged in 2020, such as, #covid19, #coronavirus, #stayhomesavelives, #lockdown, #socialdistancing, #covidvaccine, #ppe, and #nhsheroes.

*Handles (34,931 unique handles used 177,766 times)*

The most common Twitter handles cited by GPs were organisations (such as @rcgp, @nhsengland, @thebma), politicians (such as @matthancock, @borisjohnston) and fellow GPs. Handles in 2020/2021 were similar to 2019 with an increase in mentions of GPs labelled as 'renowned COVID-19 health experts' by Twitter (Appendix C, Supplementary Table 2).

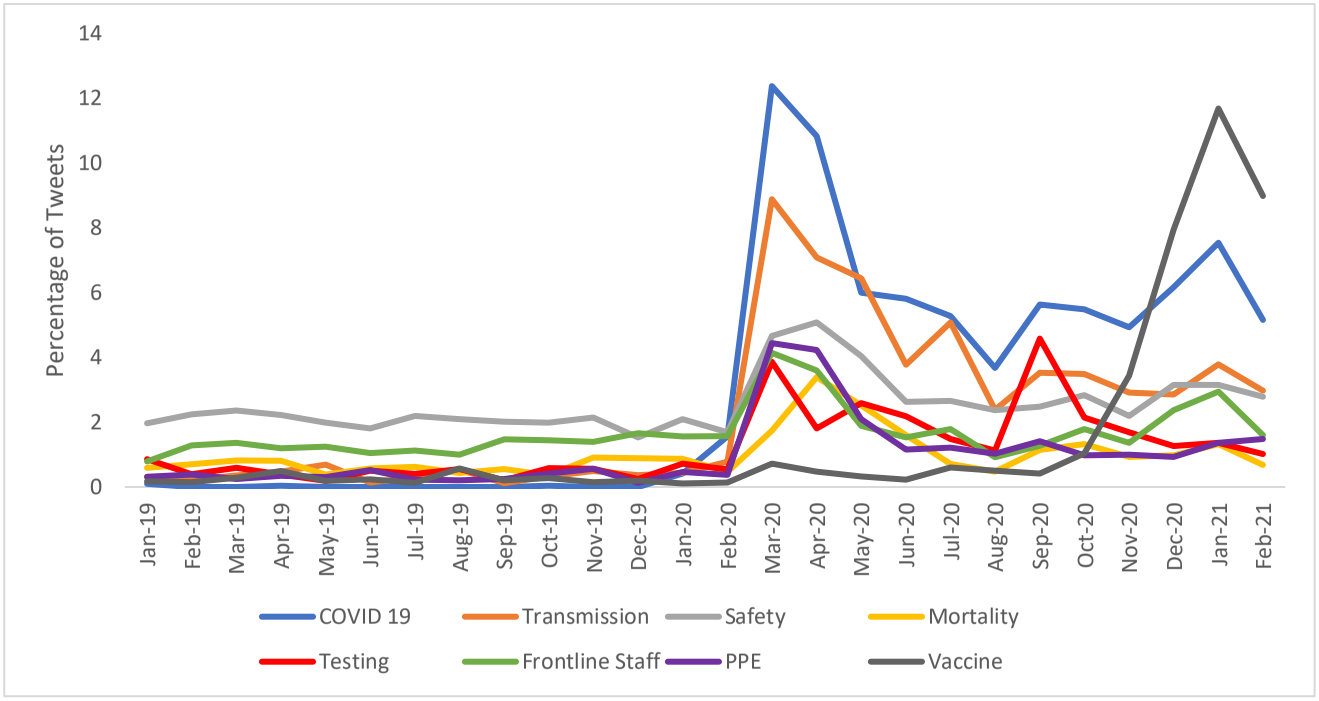
*Words (86,671 different words used 1,731,115 times)*

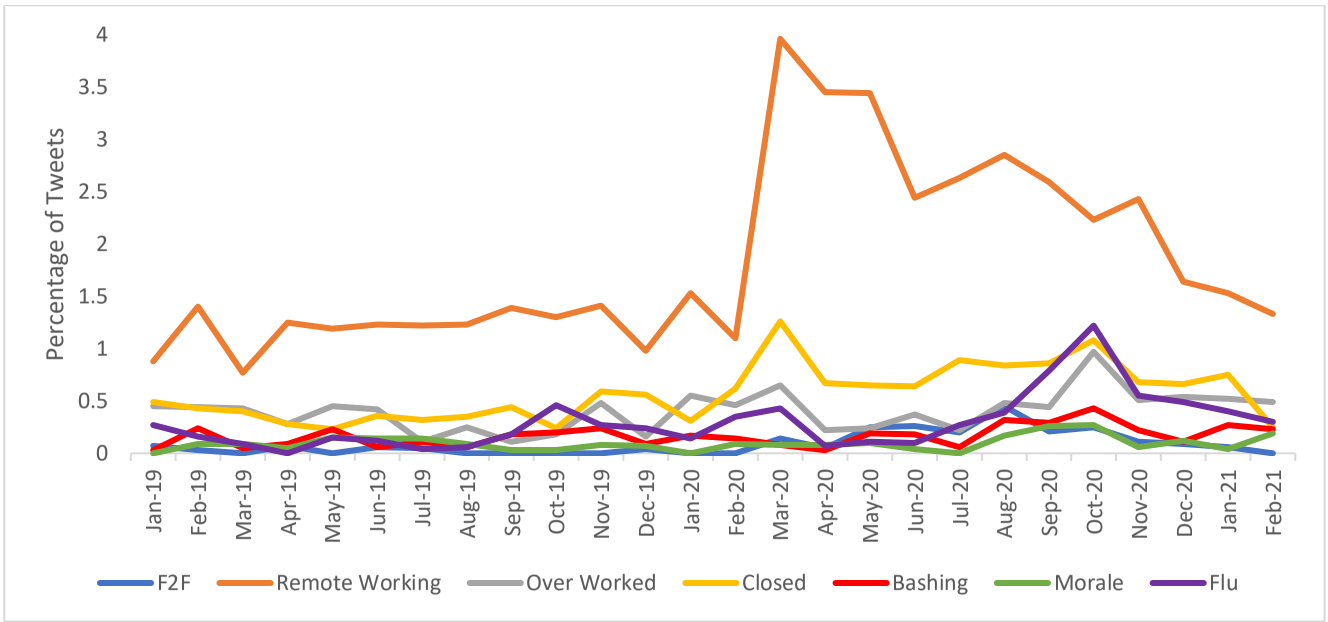
Similar language was used in each year (Appendix C, Supplementary Table 3). Many of the words used were to thank the hard work of colleagues (thank, time, great, work, staff, team, practice). Terms in 2021 reflected the COVID-19 vaccine rollout.

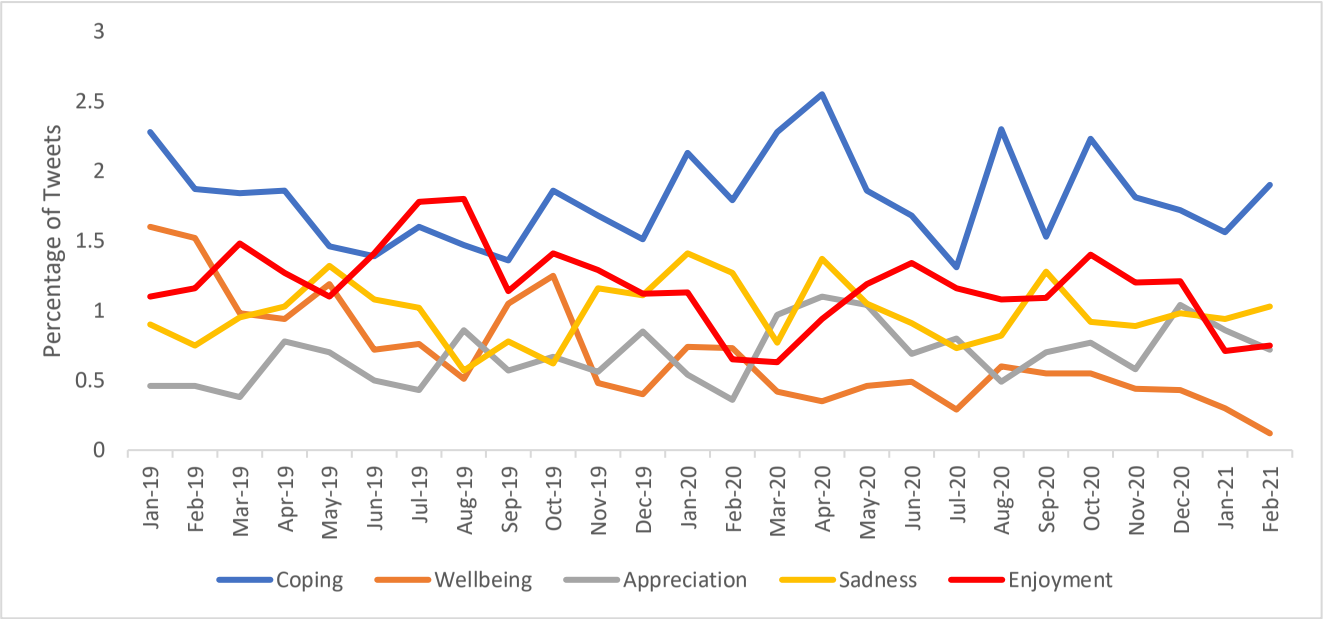
*Specified Themes (using words and hashtags)*

During the first wave, tweets related to COVID-19 and interventions to reduce transmission (such as lockdown, social distancing and PPE) were common, as were issues around safety, frontline staff and mortality (Supplementary Table 4 and Figure 3). Tweets focusing on lack of testing peaked in both the first and second wave. Commentary around remote working increased during the pandemic. References to workload, being 'closed', flu, GP 'bashing' and low morale peaked around September to October 2020. Issues related to coping, wellbeing, appreciation, sadness and enjoyment appeared throughout the time period. January 2021 saw an increase in vaccine-related tweets.

Figure 3: Daily percentages of GP tweets mentioning specific related-terms




Percentage of Tweets
3
2.5
2
1.5
1
0.5
0
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Jul-20
Aug-20
Sep-20
Oct-20
Nov-20
Dec-20
Jan-21
Feb-21
Coping
Wellbeing
Appreciation
Sadness
Enjoyment

### 4.3.3 Analysis 2: In-depth qualitative exploration

Table 6 summarises the 12 most identified themes relating to GP wellbeing, in descending order of frequency.

*Table 6: Main Themes and Sub-themes*

| **Themes** | **Sub-themes** | **No of tweets (n=7145*)** | **No of GPs (n=196)** | **% of tweets posted by female/ male GPs (n=86/ 110)**** | **% of tweets posted by White, Asian and Black GPs (n=119/63/11)***** |
|---|---|---|---|---|---|
| Changes to GP practice (n=1746, 24%) | Changes to practice (negative) | 946 (13%) | 142 (72%) | 64%, 78% | 71%, 75%, 64% |
| | Changes to practice (positive or neutral) | 800 (11%) | 132 (67%) | 64%, 78% | 67%, 68%, 55% |
| NHS resources (n=1277, 18%) | Resources, lack of (general) | 118 (2%) | 42 (21%) | 12%, 28% | 18%, 22%, 27% |
| | Resources, lack of (PPE) | 521 (7%) | 107 (55%) | 43%, 61% | 52%, 64%, 54% |
| | Resources, lack of (testing) | 289 (4%) | 70 (36%) | 34%, 35% | 28%, 46%, 36% |
| | Resources, lack of (staff) | 169 (2%) | 64 (33%) | 23%, 39% | 29%, 40%, 18% |
| | Resources, lack of (funding, pay) | 141 (2%) | 47 (24%) | 20%, 26% | 20%, 30%, 27% |
| | Resources, adequate | 39 (1%) | 26 (13%) | 6%, 19% | 9%, 17%, 27% |
| Direction/Management/Leadership from UK government or leading organizations such as RCGPs and BMA (n=1161, 16%) | Direction, management (positive) | 115 (2%) | 53 (27%) | 19%, 34% | 61%, 62%, 45% |
| | Direction, management (negative) | 1046 (15%) | 119 (61%) | 56%, 63% | 26%, 30%, 18% |
| Information (n=1037, 15%) | Misinformation (about or received by GPs) | 564 (8%) | 109 (56%) | 57%, 54% | 54%, 57%, 64% |
| | Information use and sharing (among GPs) | 343 (5%) | 89 (45%) | 44%, 45% | 39%, 52%, 64% |

| | | | | | |
|---|---|---|---|---|---|
| | Information to support GP wellbeing | 130 (2%) | 53 (27%) | 30%, 24% | 23%, 33%, 27% |
| Appreciation of or by GPs (n=1015, 14%) | Appreciation of GPs (negative) | 277 (4%) | 84 (43%) | 41%, 44% | 39%, 52%, 27% |
| | Appreciation of GPs (positive) | 188 (3%) | 84 (43%) | 43%, 43% | 42%, 44%, 45% |
| | Appreciation of others | 550 (8%) | 111 (57%) | 63%, 52% | 55%, 59%, 73% |
| Part of NHS (n=686, 10%) | NHS work, colleagues (positive) | 620 (9%) | 119 (61%) | 55%, 54% | 56%, 68%, 64% |
| | NHS work, colleagues (negative) | 66 (1%) | 30 (15%) | 10%, 18% | 12%, 17%, 36% |
| Personal GP experiences or emotions (n=613, 9%) | Experience C19 positive test/self-isolation | 151 (2%) | 58 (30%) | 29%, 30% | 22%, 46%, 27% |
| | Experience stress/burnout | 98 (1%) | 43 (22%) | 22%, 22% | 21%, 24%, 18% |
| | Emotions | 364 (5%) | 103 (53%) | 64%, 43% | 53%, 49%, 55% |
| GP workload (n=552, 8%) | Workload increase | 537 (8%) | 105 (54%) | 45%, 59% | 52%, 57%, 45% |
| | Workload decrease | 15 (0.2%) | 13 (7%) | 8%, 5% | 7%, 8%, 0% |
| Colleagues health or wellbeing (n=533, 7%) | Concern about colleague health, wellbeing (depression, burnout, etc.) | 533 (7%) | 120 (61%) | 59%, 62% | 51%, 75%, 91% |
| Risks to GPS (n=481, 7%) | Risks to GPs themselves | 367 (5%) | 89 (45%) | 43%, 46% | 39%, 56%, 37% |
| | Risks to GPs families | 45 (1%) | 24 (12%) | 13%, 12% | 9%, 17%, 9% |
| | Risks to Black, Asian and minority ethnic (BAME) GPs | 69 (1%) | 25 (13%) | 12%, 13% | 5%, 36%, 22% |
| Communication/integration/collaboration (n=294, 4%) | Communication (positive) | 208 (3%) | 69 (35%) | 29%, 40% | 34%, 37%, 27% |
| | Communication (negative) | 86 (1%) | 44 (22%) | 16%, 27% | 21%, 25%, 18% |

| | | | | | |
|---|---|---|---|---|---|
| Self-care of GPs in reference to their wellbeing (n=201, 3%) | Self-care (positive) | 189 (3%) | 65 (33%) | 37%, 30% | 30%, 37%, 36% |
| | Self-care (negative) | 12 (0.2%) | 9 (5%) | 3%, 5% | 5%, 3%, 9% |

*****Some tweets discussed more than one topic and were coded in more than one category.

**Using a test of proportions, differences between the percentages of tweets from men and women tweeting the topic were statistically significant for 'negative changes to practice' (p=0.028), 'lack of resources' (p=0.005), 'lack of staff' (p=0.019), 'PPE' (p=0.013), 'adequate resources' (p<0.001) and 'positive direction/management' (p=0.019), all posted more frequently by men than women, whereas experience of 'emotions' (p=0.003) were posted more by women than men.

***Using Fisher's exact test significant differences were found between ethnic groups in four categories: 'Risks to BAME GPs' (p<0.001), 'Resources, lack of (testing)' (p=0.048), 'Experience C19' (p=0.003) and 'Colleague Health/Wellbeing' (p=0.001) with a higher proportion of Black and Asian GPs tweeting.

#### *4.3.3.1 Changes to practice*

Most posts regarding changes to practice were neutral or negative. Neutral posts simply stated changes being made, most commonly remote working (IT systems and software, working from home and triaging patients in their own homes) with some referring to safe practices for face-to-face consultations (cleaning between patients, PPE, scrubs, and 'hot hubs'). Most of the negative comments about changing work practices related to remote working. GPs expressed concern around missed diagnoses, widening health inequalities and increased time and fatigue associated with remote consultations. GPs felt job satisfaction, personal care, emotional support and patient satisfaction were all challenged by remote working. Problems contacting patients were common because of patient availability, phone networks, internet providers, or IT systems. Working from home also brought about challenges, especially for those with children.

GPs emphasised the need to remain accessible to patients through face-to-face consultations, but safety measures (e.g. PPE, cleaning) increased time pressures. Safely visiting care homes was a major challenge, with concerns around transmission to vulnerable patients. Challenges around patient non-attendance for potential cancer, stroke and heart attacks also caused anxiety for GPs, and they described an increasing number of patients with mental health problems.

There was concern from GPs about delivering the COVID vaccination programme. It was felt this could not be done without deprioritising other services, that reimbursement was low and that other health care professionals may be more appropriate as GP staffing levels were already critical.

There were a small number of positive posts praising colleagues or software or stating the benefits of remote consultations in terms of efficiency and patient care, alongside some speculation on whether some changes could be permanent by taking the 'best of the changes into the future'. A few mentioned how retired GPs could be deployed by remote working.

Those with a preference for working from home remarked on greater work/life balance and extra time for housework or cooking. GPs were buoyed by the vaccine rollout; expressing positivity around their role in helping to 'protect the UK population' and a morale boost from patients' feedback when receiving vaccinations.

#### *4.3.3.2 Lack of Resources*

##### COVID-19 Testing

GPs expressed anger about the lack of testing in the first phase of the pandemic, resulting in risk to patients and unnecessary self-isolation creating added staffing pressures. There was frustration that GPs were perceived to be lower priority than high-profile public figures, while 'we risk our lives'. Furthermore, when comparing themselves to hospital staff, GPs were confused and angry as to why they were not a priority group, given they had more contact with patients.

The testing system again caused GPs to report problems in September 2020 with long waiting times for results, or long distances to testing centres. GPs also complained about 'rationing' patient tests. Problems with the supply and accuracy of lateral flow tests were emphasised in January 2021.

##### Staff

Reported concerns related to the shortage of doctors and nurses, with many referencing a decline in GP numbers during previous years of austerity. It was felt that primary care staffing levels were critical before the pandemic and COVID self-isolation exacerbated these problems. GPs reported attrition throughout the pandemic, due to factors such as workload, underfunding, low morale and lack of appreciation.

##### Personal Protective Equipment (PPE)

Lack of PPE was a commonly reported problem leading some GPs to purchase their own, reuse equipment, improvise, accept donations or post pleas on social media for supplies. GPs felt they were prioritised after secondary care and 'even supermarket employees', and initial public panic buying meant low supplies of hand sanitiser or cleaning products.

The quality of PPE was described as 'substandard' or even 'hopeless' with flimsy paper masks, thin plastic aprons and masks four years out of date. Pleas were made for World Health Organization guidance on PPE to be followed including FFP3 masks. Questions on the effectiveness of surgical masks increased as more emphasis was placed on aerosol transmission.

There were concerns about being silenced, with social media appeals taken down, Clinical Commissioning Groups asking GPs not to speak out and media reports of 'whistleblowers threatened with job loss for speaking out on PPE'. GPs expressed anger at the UK Health Secretary's comment that PPE should be treated as a 'precious resource' as this appeared to blame staff for not using equipment carefully. GPs questioned how many lives were lost because of inadequate PPE supplies.

##### Funding and Pay

Our sample of GPs frequently posted about perceived funding cuts over the past 10 years. The reported frustration about 'underfunded' primary care grew over time as private sector companies were commissioned to provide services such as 'NHS Test and Trace', which many felt would have been better managed by the NHS.

There was concern over what many GPs viewed as a real terms pay cut and frustration when comparisons were made to MPs' salaries or consultants paid by government funding.

##### Adequate Resources

These posts were far fewer in number (see Table 2) and tended to refer to having PPE or testing available. Some of these stated that 'at last we have plenty of PPE', thus referring to a time when supplies were inadequate.

#### *4.3.3.3 Direction and management*

Approximately a tenth of posts relating to direction and management were positive, and were mostly directed at organisations such as the RCGP, King's Fund, or Public Health England with a few directed at government actions such as the NHS workers' visa extension and scrapping NHS fees for overseas staff.

The vast majority of posts, though, were negative. A few GPs were negative about organisations such as the RCGP, NHS England and the BMA, expressing a need for more support and action. Most criticism was focused at the government, particularly in England. Issues were related to other themes in our analysis such as underfunding, declining numbers of GPs, lack of PPE and testing, inconsistent or poor guidance for GPs and a perception of GPs being used as a scapegoat.

Shielding lists were seen as poorly managed by government, with GPs rectifying errors. The paperwork required for returning GPs was criticised, and some thought the scheme was putting older people at risk. Poor management of care homes during the pandemic and risks to staff and patients were also discussed; there were calls for the government to be accountable for the deaths of NHS staff.

GPs felt overlooked by government with regard to testing and mandatory public face coverings. There was a general sentiment that the focus of government and media was on hospital patients and staff. There was anger about the behaviour of political figures who 'break the rules'.

Some GPs did not feel properly supported to carry out the COVID-19 vaccination programme and held concerns around supply chain issues and fielding patient enquiries.

#### *4.3.3.4 Misinformation about or received by GPs*

GPs complained of confusing information received from government. For example, in March 2020, concerns were raised about the mask policy in primary care, when GPs should isolate, suspension of routine work, and whether to move to remote consultations. As the pandemic progressed other issues were raised such as the 'shambolic' correcting of shielding, advice from NHS 111 and government for the public to contact their GP inappropriately, and misinformation on dexamethasone use.

Posts relating to misinformation about GP surgeries being closed persisted through the pandemic, with peak mentions in April and September 2020. The government was seen as perpetuating this misinformation. Many GPs were particularly affronted by a letter from NHS England in September 2020 to remind GP practices of their duty to provide face-to-face appointments; warning that failure to do so could constitute a breach of contract. GPs declared that they were not 'tucked away safe' or 'twiddling our thumbs' but 'working harder than ever'. Pleas to the public and reassurances that practices were open continued into 2021.

#### *4.3.3.5 Information use and sharing among GPs*

Some GPs shared advice on working practices, whilst others asked questions of their colleagues. Sharing petitions on issues such as testing or PPE and work surveys was commonplace, as was sharing factual information on issues such as GP deaths, risks for BAME GPs, or doctors with Long COVID.

#### *4.3.3.6 Information to support GP wellbeing*

These posts often consisted of links to webinars, events or resources to support GP wellbeing. Other posts simply suggested ways to help such as 'being kind to yourself', 'taking breaks', 'taking down time' and 'keeping active'.

#### *4.3.3.7 (Lack of) appreciation of GPs*

Many GPs perceived being unappreciated by media, government and the public. In the first lockdown there were a few reports of stealing from GP practices such as toilet rolls and hand sanitizer as well as vandalism, graffiti and abuse from patients. They expressed considerable anger and frustration at being accused of being 'closed', needing to 'reopen' and the insinuation that GPs are 'sitting around doing nothing', 'lazy', 'selfish' and not doing the job they 'signed up to'. GPs felt they lacked the respect and appreciation they deserved. There were references to receiving abuse – 'GP bashing' or GPs being blamed for the 'failures of government'. GPs complained of feeling like 'public enemy number one', particularly from September 2020. The 'clap for carers' was met initially with a positive emotional response by some GPs. Some said that 'it bought a lump to my throat' or 'a tear to my eye'. As time went on, however, this dissipated. By January 2021, GPs' discussion around a return of 'clap for carers' was irritated, and included calls for the public instead to observe the rules to protect the NHS.

There were fewer posts relating to positive appreciation of GPs and these tended to reference appreciation shown in the form of gifts from businesses or the local community, allocated shopping times, donations of PPE, or clapping in the first lockdown. GPs recognised patient gratitude, particularly during the vaccination programme.

#### *4.3.3.8 Appreciation of others*

GPs expressed gratitude to those supporting them in the pandemic, including organisations, volunteers, the public, neighbours, and local businesses. There was also admiration for other professions such as scientists and teachers.

#### *4.3.3.9 NHS work colleagues*

There were expressions of gratitude to NHS staff, particularly primary care colleagues, secondary and community care staff (particularly care homes), domestic staff and administrative teams in hospitals. There were comments about altruism and dedication with staff 'going above and beyond the call of duty', 'showing courage' and being 'amazing', 'world class' or 'heroes'. There were also comments about how 'fantastic' the NHS itself is by providing free care, rapid adaptations to change and an incredible response to the crisis.

There was, however, some criticism of NHS colleagues, some of whom were perceived as treating GPs 'like commodities instead of human beings', 'bullying', 'too much bureaucracy', and a management team 'devoid of reality'.

#### *4.3.3.10 Colleague health and wellbeing*

Issues were raised regarding burnout, stress, anxiety and even suicide resulting from the 'extreme pressure' and 'overwhelming workload'. There were concerns about GPs leaving the profession at 'an alarming rate', and calls for support for GP wellbeing. There was resistance to 'resilience training', seen by some as 'blaming colleagues' and thus 'insulting'; others welcomed 'support groups', 'retreats' and being kind to colleagues.

GPs were worried for their colleagues' safety, particularly given problems with PPE and testing, likening GPs to 'soldiers fighting without armour'. GPs felt their colleagues were 'putting their lives on the line', particularly returning retired GPs and BAME GPs. In response to the risks, GPs reported that colleagues were 'preparing their wills', looking into death in service benefits or seeking guardianship of their children

in preparation for the worst. Other posts announced colleagues hospitalised with or dying from COVID-19, and numbers of GPs dying.

#### *4.3.3.11 Workload*

Throughout the time-period under consideration, GPs expressed anxiety over their volume of work. They reported working long shifts, frequently working over 50 hour weeks, working on days off, not taking annual leave and cancelling bank holidays. Before COVID-19, primary care was described as at 'breaking point'. As the pandemic set in, GP workload was stated to have 'gone through the roof' creating 'immense pressure' with GPs 'pushed to the limit'. The situation was described as 'the busiest ever' and 'unsustainable'. A very small minority of posts related to a reduction in workload, mostly during April 2020 (see Table 6).

The GPs reported additional pressure resulting from the increase in remote consultations (described as taking longer), NHS 111 referrals, hospitals reducing non-COVID-19 services, keeping up to date with COVID-19 evidence and safe working practice guidelines, dealing with patient shielding lists, donning and doffing PPE, sanitising between patients, requests for mask exemption letters, shielding notes, isolation notes, sick notes, and early ordering of prescriptions. In addition, patient demand was perceived to have increased due to a rise in mental health issues, an expanded flu vaccination programme and the COVID-19 vaccination rollout.

Discussion regarding ways in which workload could be managed centred around improving mental health services, community volunteers, self-referral services, increased capacity, and managing patient contact with practices for unnecessary reasons (e.g. vaccination dates). Some GPs reported working part-time as a means of coping with the workload.

#### *4.3.3.12 Emotions and stress*

GPs were anxious about their own safety, the safety of their families, the 'tsunami' in workload, and lack of resources. Many stated that they were 'exhausted' or 'fatigued' and 'fearful' about the level of care for patients and 'heartbroken' by patients suffering or dying alone. GPs talked about being 'teary', 'fearful about the uncertainties', and 'dreading the future'.

In terms of stress, GPs referred to pressures of providing care in a pandemic. They used phrases such as 'unbearable pressure', 'completely overwhelmed', and 'never felt so exhausted'. The impact on their mental health was realised with comments that they felt 'mentally drained', 'broken', 'wiped out', 'worn down' and 'burnt out'.

GPs expressed anger at the government and the media for making them feel like 'nobodies' or 'expendable'. Low morale was exacerbated by 'false rumours' and a 'constant attack on GPs' by media, government and the public. Many GPs commented on how they were feeling frustrated or 'insulted' by public behaviour such as noncompliance to lockdown or isolation, not wearing masks, or vaccine uptake. Others mentioned feeling guilty because they were shielding or taking annual leave, or even being made to feel guilty for catching COVID-19 as if it was a 'lifestyle choice'. Some felt 'not listened to' and powerless in the face of adversity.

From late November there were more positive posts with GPs reporting that they were at last 'feeling hopeful'. Reports of getting the COVID-19 vaccine were met with comments like 'Fantastic Day!', 'feeling

privileged' and 'so delighted'. Those reporting on their involvement with the vaccine roll-out described feeling 'emotional' and 'proud'.

#### *4.3.3.13 First-hand experience of COVID-19*

In the earlier posts, before testing commenced, many felt confident that they had COVID-19 stating that they 'had textbook symptoms' or 'had seen enough cases to know'. Some had confirmation later in the year via an antibody test.

#### *4.3.3.14 Risk*

Some GPs resigned themselves to 'inevitably' catching COVID-19. GPs commented that they were more vulnerable than other professions such as shop workers and those in secondary care, stating that 90% of patient contact is with GPs and contact is at closer proximity. Concerns around risk to BAME GPs centred around the disproportionately higher death rate in BAME GPs and calls for 'appropriate measures' to be put in place. These views were more commonplace among BAME GPs.

Once the vaccine was available, some GPs were frustrated by delays to their own vaccination, and many reported receiving it.

In terms of concern for family members, some GPs talked about 'living in fear of unknowingly passing it on to my family and loved ones', particularly more vulnerable family members.

#### *4.3.3.15 Communication*

There was praise for primary care teams 'pulling together' and a clear sense of 'solidarity', alongside comments about how well community teams and volunteer/good neighbour schemes worked with GPs. While closer working relationships between primary and secondary care were referenced in some posts, there was a realisation that this was much needed. A 'Berlin Wall' was described between primary and secondary care and a 'them and us mentality.' Communication was cited as particularly poor, with hospitals 'bouncing back' GP referrals, and delays in patient test results. There were calls for better IT systems and secondary care staff to spend time in primary care. Some praised technology and 'online channels' that enabled improved communication and made the situation more 'bearable'.

Pleas were also made for better communication between the NHS and government, particularly as GPs had no warning of policy announcements such as shielding changes, and flu and COVID-19 vaccine roll-outs.

#### *4.3.3.16 Self-care*

GPs were very aware of the potential impact of the pandemic on their mental health; some reported looking after themselves, mostly through exercise and eating well, as well as some 'self-care' activities. The importance of taking annual leave and having days off 'even in the middle of a pandemic' was also emphasized.

Others, though, disliked the 'self-care mantra' and felt resilience planning was insufficient to 'reverse the unprecedented levels of stress faced by primary care doctors today'.

## 4.4 Summary

UK GPs' current engagement with Twitter made it possible to conduct a mixed-methods social media analysis to explore large volumes of tweets relating to their perspectives and wellbeing during the pandemic and to compare this with pre-pandemic. This analysis demonstrates the value of collecting real world online data through informal social media posts, which is uniquely representative of lived experience across large samples.

Our analysis reveals trends in the social commentaries made by GPs during the pandemic, including issues pertinent to GPs that may have affected their wellbeing. In our quantitative analysis, amongst a number of interesting patterns observed over this period, those of particular note relate to the strength of feeling around protection, risk and testing during the first wave of the pandemic; communication issues with and perceived lack of appreciation by government, secondary care and the public, and peaks in commentary during the initial COVID-19 vaccine rollout. Similarly, our qualitative thematic analysis revealed key issues around perceived lack of resources and support, which had implications for GPs' safety, workload and wellbeing. Perceived lack of support from government, media and the public affected their morale.

Our analysis showed that comments about wellbeing in 2019 were more predominantly related to patients, whereas 2020 saw more focus on GP wellbeing. Posts related to coping commonly reflected work pressures and fluctuated throughout the time period studied, suggesting that such views were prevalent well before the pandemic. Our qualitative findings highlight the perceived sources of increased workload and stress during the pandemic, including rapid moves to remote working (with remote consultations described as taking longer), GP self-isolation or shielding increasing pressures on colleagues, poor or confusing dissemination of policy guidance, increased patients with mental health problems, time taken cleaning and donning/doffing PPE. Meanwhile, frustrations were raised following media and even government references to GP practices being 'closed'.

One other study has explored health care professionals' wellbeing using social media, finding issues of lack of PPE and testing and changes in practice due to telemedicine predominate amongst US doctors. Top phrases by physicians were 'help us' and 'need PPE'. This concern was also voiced by UK GPs in our study. The US study also found discourse regarding unemployment (including furlough and pay cuts) was high among US physicians (Sullivan et al. 2021), which we did not identify. This may have to do with the difference between US primary care and the NHS as a service.

It is already known that health professionals use social media to create virtual communities (Rolls et al. 2016). This is also evident from our study by how many of the GPs in our sample follow and send messages (often of support) to other GPs, including to others in our sample, demonstrating the degree of connectivity and support between GPs on Twitter. Our findings suggest the pandemic aggravated already existing problems in general practice, which were contributing to the service 'in crisis'. While GPs worked to adapt rapidly, they described frustrations at a lack of leadership and poor management around issues such as PPE. The usual support network for was disentangled during the pandemic, with social media perhaps being used more to partially replace it.

# 5. Qualitative Interview Study

## 5.1 Introduction

In order to explore GPs' wellbeing and lived experiences during COVID-19 and contribute primary research evidence to this field, we undertook in depth qualitative interviews. There were two planned phases of data collection, with the first commencing as soon as ethical and HRA approval was sought and the second planned after dissemination of the 2020 GP Worklife Survey; to enable detailed exploration of these survey findings. Time delays on the HRA approval as well as timing of the GP Worklife Survey made this unfeasible, instead we undertook one phase of data collection from March to June 2021. .

## 5.2 Methods

Interviews lasting approximately one hour explored GPs' experiences and wellbeing before and during COVID-19, including challenges or stressors, as well as facilitators that may have improved working practices, or could be used to reduce job stress amongst GPs in future. We also explored future intentions, motivations and thoughts around potential policy changes that could be used to improve GPs working lives. A multidisciplinary team developed topic guides in consultation with the project steering committee and piloted these before use.

### 5.2.1 Sampling and recruitment

We aimed to sample 40 GPs purposively to include GPs in the following career stages and with variation in key demographics (ethnicity, age, gender, contract type and local area characteristics):

(1) Early career GPs – those in the final stages of training and in the first five years of practice.
(2) Established GPs, particularly GP partners who carry responsibility for practice organisation and finance as well as patient care
(3) Late-career GPs and retired GPs who returned to general practice during the COVID-19 pandemic.

We planned a comprehensive and evidence-based recruitment strategy through multiple channels, and also developed an infographic to accompany information shared through these various channels to capture interest.

Our initial recruitment approach through social media proved so successful that we had over 40 GPs offering to participate within 24 hours. In order to obtain maximum variation in participant characteristics and reduce the potential for bias, we also recruited through other methods including communications with our regional deanery, snowballing local and national networks, email circulation to the RCGP late-career and recently retired group and emails directly to participants of the GP Worklife Survey who had indicated they would be willing to participate in research of this type.

Potential participants were asked to complete a brief (2 minute) participant approach survey (Appendix D) to provide contact details and some basic demographic information for sampling purposes. Participants were asked to consent to share this information by clicking 'submit.'

A holding email was sent to all potential participants offering to take part, along with Participant Information Leaflets and Consent Forms (Appendix D). Participants meeting the sampling framework for the study were contacted to arrange a convenient time for interview, either via zoom or telephone. In line

with hourly rates for locum GPs, we provided an honorarium of £100 to thank each participant for their time.

### 5.2.2 Analysis

We used transcriptions and recordings to analyse the data thematically; this was facilitated by using data sorting software, NVivo 12 (QSR International Pty Ltd, 2018). Our approach to analysis was inductive, with themes emerging from the data rather than using a pre-specified theory. We used framework Analysis for this process, as described in Table 7 and based on the work of Ritchie and Spencer (Ritchie et al. 1994).

*Table 7: Process of Framework Analysis*

| Stage of Analysis | Description |
|---|---|
| Managing the data | We managed transcriptions using Nvivo 12 software (QSR International Pty Ltd, 2018) to supplement the researchers' analytical thinking and familiarisation with the data. |
| Familiarisation | Both researchers (CH and LJ) that undertook interviews immersed themselves in the data by reading and re-reading transcripts, listening to audio recordings and producing detailed notes for each interview in order to help facilitate the following analysis stages. |
| Identifying a thematic framework | Researchers independently developed two thematic frameworks and met on multiple occasions to discuss and refine these into one thematic framework. This was tested on 4 transcripts prior to use, and further iterations continued to be made through discussion with the study team as the coding developed. |
| Indexing the data | Both researchers then indexed, or coded the interview data according to 10 themes and 95 subthemes which were identified in the thematic framework. Data were re-coded where needed whenever revisions to the coding framework were made. |
| Charting | Once coding was complete, we explored the relationships between themes using mindmaps, research team discussions and creation of overarching themes, or 'supercodes.' This process identified six overarching themes made up of 30 subthemes. We also explored categories of participants, particularly focusing on relationships between career stage, gender, job role, ethnicity, previous or current experience of mental illness and working in a deprived geographical area. We used count data to explore potential trends in analysis, though this did not replace in-depth qualitative analysis of the data, which was facilitated through mapping themes according to these key characteristics. |
| Mapping and interpretation | In order to go beyond the purely descriptive account of the data and develop wider meanings about links between phenomena and subgroups of participants, we mapped themes to build patterns in the data, bearing in mind the original research objectives and also exploring negative or deviant cases to explore alternative explanations for the data. |

Two researchers (LJ and CH) coded the interviews, checking a 20% sample for consistency. The researchers met weekly to enable triangulation, refining the coding framework as the analysis progressed (Table 7. We planned to undertake member checking (clarifying meaning with interviewees where meaning is unclear during interviews and analysis), but this was not needed.

*Reflexivity*

We maintained a reflexive approach throughout the design and analysis stages to limit the potential for our pre-conceptions to influence research findings. Researcher triangulation (in data collection and analysis) improves the credibility and reliability of findings.

### 5.2.3 Ethical considerations

We obtained ethical approval from the Department of Health Sciences Research Ethics Committee in November 2020. While NHS Research Ethics Committee review was not required for this study, we submitted the study to the Health Research Authority for research governance approval. After a lengthy delay in this process and further consultation with HRA, we received confirmation that HRA approval was not required as the recruitment methods did not involve NHS organisations.

Participants were not obliged to take part and were required to give informed verbal consent to do so. Participants were able to withdraw at any time, though none did. Participants were assured of anonymity and no identifiable information from quotations will be included in this report or subsequent publications. We have also taken steps to ensure that reported information does not identify the GP practice or Primary Care Network. We stored identifiable information securely, and none was viewed outside the research team at the University of York.

## 5.3 Results

### 5.3.1 Sample characteristics

Interviews with 40 GPs took place between March and June 2021, lasting between 43 and 72 minutes. Participants were from a range of career stages; 13 early career GPs, 19 established GPs and 8 late career or retired GPs. This is reflected in the spread of ages detailed in Table 8. The largest number of GPs were in the 30-39 age range and we interviewed more women than men (29/40). There was similar proportion of BAME GPs to those reported nationally (GMC data indicates 29% doctors are from BAME groups), our sample had a slightly larger proportion of white British GPs (67.5% compared to GMC data of 52% of all doctors). In terms of job role, we interviewed more salaried GPs than other job roles (17), followed by GP partners (14). GPs in our sample worked between 1 and 8 clinical sessions per week (median 6, IQR 3.63) and almost half of participants (n=18) also held additional roles alongside their clinical workload. Such roles included practice management, teaching, research, mentoring, coaching, appraising, working for practitioner health and national or local leadership roles, for example with Royal College of General Practitioners, NHS England, Clinical Commissioning Groups (CCGs) or Primary Care Networks (PCNs). Some also undertook additional locum work.

Through discussion, four GPs described they had had a confirmed COVID diagnosis and a further eight GPs suspected having had COVID, when testing was not available at the start of the pandemic. In terms of local area demographics, 10 participants indicated that they were working in areas of high deprivation, and nine worked in areas with pockets of deprivation. Four GPs worked in rural or semi-rural locations and four GPs described serving a large elderly population.

### 5.3.2 Thematic findings

We created a coding framework containing 91 codes to sort data under nine 'supercodes.' During the 'charting' phase of the Framework Analysis, these were refined to produce the following thematic findings, sorted according to the overarching themes: personal impact and wellbeing, pre-COVID experiences, challenges of COVID, facilitators, policy Insights and future plans. Table 8 provides an overview of these and subthemes.

*Table 8: Themes and sub-themes*

| Overarching themes | Subthemes | Further subcategories |
|---|---|---|
| *Personal Impact and Wellbeing* | Stress, anxiety and burnout | |
| | Stigma and presenteeism | |
| | Physical symptoms | |
| | Positive emotions | |
| *Pre-COVID experiences* | Workload and complexity | |
| | Patient perceptions | |
| | Underfunding | |
| *Challenges during COVID* | Personal risk | |
| | Workload | *Mental health consultations, Administrative work* |
| | Practice changes | *Triage systems, Remote consultations, Vaccination rollout* |
| | Wider collaboration | |
| | Difficulties in teams | |
| | Leadership | |
| | Public perceptions and patient interactions | |
| | Personal challenges | |
| | Challenges specific to trainees | |
| *Facilitators* | Informal support | |
| | Teamworking | |
| | Formal support | |
| | Strategies to manage wellbeing | |
| | Portfolio careers and part time working | |
| *Policy Insights* | Attracting and retaining staff | |
| | Cultural change around wellbeing | |
| | Increased funding | |
| | Managing patient expectations | |
| | Media and messaging | |
| | Appraisal System | |
| | Wellbeing initiatives | |
| *Future Plans* | | |

*Table 9: Participant characteristics*

| Career stage | N | (%) |
|---|---|---|
| *Early* | 13 | 32.5 |
| *Established* | 19 | 47.5 |
| *Late* | 8 | 20.0 |
| Gender | | |
| *Male* | 11 | 27.5 |
| *Female* | 29 | 72.5 |
| Age | | |
| *< 30* | 3 | 7.5 |
| *30 - 39* | 20 | 50.0 |
| *40 - 49* | 9 | 22.5 |
| *50 - 59* | 6 | 15.0 |
| *>60* | 2 | 5.0 |
| Ethnicity | | |
| *BAME* | 10 | 25.0 |
| *White British* | 27 | 67.5 |
| *White non-British* | 3 | 7.5 |
| Location | | |
| *England - East* | 3 | 7.5 |
| *England - London* | 5 | 12.5 |
| *England - North East* | 1 | 2.5 |
| *England - North West* | 3 | 7.5 |
| *England - South East* | 3 | 7.5 |
| *England - South West* | 4 | 10.0 |
| *England - West Midlands* | 5 | 12.5 |
| *England - Yorkshire and Humber* | 14 | 35.0 |
| *Northern Ireland* | 2 | 5.0 |
| Job role | | |
| *GP trainee* | 6 | 15.0 |
| *GP retainer* | 1 | 2.5 |
| *Salaried GP* | 17 | 42.5 |
| *GP partner* | 14 | 35.0 |
| *Retired GP* | 2 | 5.0 |
| Clinical sessions | | |
| *Median (IQR)* | 6 (3.63) | |
| *1-4* | 11 | 27.5 |
| *5-7* | 16 | 40.0 |
| *≥8* | 9 | 22.5 |
| *Retired* | 2 | 5.0 |
| *Unknown* | 2 | 5.0 |
| Portfolio roles | 18 | 45.0 |
| Area demographics | | |
| *Highly deprived* | 10 | 25.0 |
| *Pockets of deprivation* | 9 | 22.5 |
| *Rural or semi-rural* | 4 | 10.0 |
| *Large elderly population* | 4 | 10.0 |
| COVID history | | |
| *Suspected COVID* | 8 | 20.0 |
| *COVID diagnosis* | 4 | 10.0 |

*Table 10: Participant characteristics and descriptive IDs.*

| Descriptive ID | Career stage | Age | Ethnicity | Gender | Role | Region |
|---|---|---|---|---|---|---|
| GP1,MpartnerEst | Established | 30 - 39 | White British | Male | GP partner | England - Yorkshire & Humber |
| GP2,FsalariedEst | Established | 30 - 39 | White British | Female | Salaried GP | England - Yorkshire & Humber |
| GP3,FpartnerLate | Late | 50 - 59 | White British | Female | GP partner | England - North East |
| GP4,MsalariedEarly | Early | 30 - 39 | White British | Male | Salaried GP | England - Yorkshire & Humber |
| GP5,FsalariedEst | Established | 40 - 49 | White British | Female | Salaried GP | England - North West |
| GP6,FsalariedEarly | Early | 30 - 39 | Asian British | Female | Salaried GP | England - Yorkshire & Humber |
| GP7,MpartnerLate | Late | 50 - 59 | Asian / Asian British - Pakistani | Male | GP partner | England - Yorkshire & Humber |
| GP8,FsalariedEarly | Early | 30 - 39 | White British | Female | Salaried GP | England - Yorkshire & Humber |
| GP9,FpartnerEst | Established | 40 - 49 | White British | Female | GP partner | England - Yorkshire & Humber |
| GP10,FtraineeEarly | Early | < 30 | Asian / Asian British - Indian | Female | GP trainee | England - London |
| GP11,FsalariedEst | Established | 30 - 39 | Asian / Asian British - Pakistani | Female | Salaried GP | England - West Midlands |
| GP12,MtraineeEarly | Early | < 30 | White British | Male | GP trainee | Northern Ireland |
| GP13,FtraineeEarly | Early | 30 - 39 | White - Irish | Female | GP trainee | Northern Ireland |
| GP14MpartnerEst | Established | 30 - 39 | Asian / Asian British - Indian | Male | GP partner | England - West Midlands |
| GP15,FretainerEarly | Early | 30 -39 | White British | Female | GP retainer | England - Yorkshire & Humber |
| GP16,MsalariedEarly | Early | 30 - 39 | White British | Male | Salaried GP | England - West Midlands |
| GP17,Mretired | Late | >60 | White British | Male | Retired GP partner | England - South East |
| GP18,FpartnerLate | Late | 50 - 59 | White - Other | Female | GP partner | England - North West |
| GP19,FpartnerLate | Late | 50 - 59 | White British | Female | GP partner | England - South West |
| GP20,FtraineeEarly | Early | 30 - 39 | White British | Female | GP trainee | England - Yorkshire & Humber |
| GP21,FsalariedEst | Established | 40 - 49 | Other ethnic group - Arab | Female | Salaried GP | England - West Midlands |
| GP22,FsalariedEst | Established | 30 - 39 | White British | Female | Salaried GP | England - South West |
| GP23,FsalariedLate | Late | 50 - 59 | White British | Female | Salaried GP | England - East |
| GP24,FpartnerLate | Late | 50 - 59 | White British | Female | GP partner | England - South West |
| GP25,FsalariedEst | Established | 40 - 49 | Asian / Asian British - Indian | Female | Salaried GP | England - London |
| GP26,FtraineeEarly | Early | 30 - 39 | White British | Female | GP trainee | England - Yorkshire & Humber |
| GP27,MpartnerEst | Established | 40 - 49 | White British | Male | GP partner | England - Yorkshire & Humber |
| GP28,MsalariedEarly | Early | 30-39 | White British | Male | Salaried GP | England - London |
| GP29,FtraineeEarly | Early | 30 -39 | Asian | Female | GP trainee | England - East |
| GP30,FpartnerEst | Established | 40 - 49 | White British | Female | GP partner | England - North West |
| GP31,FsalariedEst | Established | 40 - 49 | White British | Female | Salaried GP | England - South East |
| GP32,MpartnerEst | Established | 40 - 49 | White British | Male | GP partner | England - West Midlands |
| GP33,FsalariedEst | Established | 30- 39 | Black - African | Female | Salaried GP | England - London |
| GP34,FsalariedEst | Established | 30 - 39 | White British | Female | Salaried GP | England - South West |
| GP35,FpartnerEst | Established | 30 - 39 | White British | Female | GP partner | England - East |
| GP36,FpartnerEst | Established | 30 - 39 | White British | Female | GP partner | England - Yorkshire & Humber |
| GP37,MpartnerEst | Established | 40 - 49 | White British | Male | GP partner | England - Yorkshire & Humber |
| GP38,FsalariedEst | Established | 30 - 39 | Asian / Asian British - Pakistani | Female | Salaried GP | England - South East |
| GP39,FsalariedEarly | Early | <30 | White British | Female | Salaried GP | England - Yorkshire & Humber |
| GP40,Fretired | Late | >60 | White - Other | Female | Retired GP partner | England - London |

#### *5.3.2.1 Personal Impact and Wellbeing*

GPs voiced generally negative sentiment around low motivation, dissatisfaction with work, frustration and anger during interviews.

Many GPs reported low motivation and being dissatisfied with work, with particular problems noted during winter 2020. GPs were "*fed up*" (GP2,Fsalaried Est) and described a "*sense of dread… going into work*" (GP7,M partner Late). For some this related to general stress of the COVID pandemic experienced also by the wider public, including general social isolation, lack of enjoyment in things and pressures of home-schooling, which created further fatigue and low motivation:

> *"You need a lot of energy to do your job well in general practice because you're always giving to patients. If you're tired or you've been home-schooling and things at home are not normal, it's hard to do your job as well."* GP15,Fretainer Early

GPs described feeling lonely, particularly in relation to isolation from their team, but also in relation to missing the human interaction with patients that they have valued and had influenced their specialty choice:

> *"I was quite dissatisfied at work over the last month or so really... you don't get that satisfying…that feedback from patients, because you're not seeing a patient face to face."* GP4,Msalaried_Early

Some GPs described anger and frustration at the public not following COVID guidance. There was also a sense of frustration and concern around their inability to help some patients as a result of constraints elsewhere in the health and care system; GPs described *"letting patients down"* (GP13,FtraineeEarly).

##### 5.3.2.1.1 Stress, anxiety and burnout

Feelings of stress and anxiety were by far the most discussed emotions relating to participants' experiences during the pandemic. Stress, often referred to as a feeling of being overwhelmed, was discussed by 28/40 participants and the same number also discussed anxiety. GPs described their work as *"all consuming"* (GP2,FsalariedEst), having a "*background level of anxiety"* (GP3,FpartnerLate). Anxiety peaked at the beginning of the pandemic, when GPs described fear of the unknown and potential risk to themselves and their families, some also commented on concern for other family members working in hospital roles. GPs describe higher levels of anxiety at the beginning of the pandemic:

> *"Early on was more chaotic, I think, chaotic, anxious, tearful, frightened, but able to get on with it and do it" GP31,FsalariedEst*

Participants held concerns about how their wellbeing was affecting their work, acknowledging that they became more impatient with patients as the day progressed, and worry about making mistakes:

> *"I think it's that decision fatigue, of just constantly…there's a constant flow… towards the end of the day, I'd get a phone call at five o'clock, with someone talking about how low they're feeling, and they need a bit of support… at the end of the day, I couldn't give the same support*

*to that patient that I perhaps would have done, if it was eight o'clock that I was speaking to them." GP4,MsalariedEarly*

Maslach (2016) defines burnout as comprising three dimensions: overwhelming exhaustion, feelings of cynicism or detachment, and ineffectiveness or lack of personal accomplishment. Some GPs described some or all of these characteristics, and the impact of their experiences on their family and relationships:

*"I think the work, particularly in the last few months, has left me pretty exhausted, and, you know, I kind of come home in the afternoon, or in the evening, and I'm pretty useless to my wife, or to anyone else really." GP28,MsalariedEarly*

Causes of stress and anxiety differed during the course of the pandemic, with a clear period of initial pressure occurring at the start of the pandemic when many commented on concerns around managing adaptations to work e.g. movement to remote working and development of hot sites, but also dealing with uncertainty around what lay ahead:

*"One of the, kind of, long-term stresses has been like this is an unprecedented situation... I'm not walking a tried and tested road, and that's nerve-wracking… doctors are used to dealing with uncertainty, but this is on another level." GP20,FtraineeEarly*

GPs reported further anxieties as levels of unmet patient need grew from the autumn of 2020 onwards; there were concerns about what lay ahead in terms of demand, as well as support available for patients' mental and physical needs. One GP described work as becoming *"increasingly challenging and it's becoming more and more stressful as the year has gone on"* (GP11,FsalariedEst).

While feelings of stress, being overwhelmed and low motivation were common, five GPs experienced clinical diagnoses of mental health problems for which they sought formal clinical support during the pandemic (GP3,FpartnerLate, GP9,FpartnerEst, GP20,FtraineeEarly, GP24,FpartnerLate, GP34,FsalariedEst). These participants were all female and there was variation in terms of age and job roles. Two had a history of mental health problems. A further three GPs described a history of mental health problems, but they had not sought formal support for their mental health during the pandemic. GP34,FsalariedEst described needing to take time out from work to recover:

*"You're just filling and filling the bucket, and at some point it will overspill. And you've just got to hope that you don't miss something really important… So I want to remove myself from that situation for at least a period of time, just while I rebuild my armour I suppose and see if I want to do it again." GP34,FsalariedEst*

##### 5.3.2.1.2 Stigma and presenteeism

Some participants had a tendency to downplay their experiences of stress *(e.g. "I'm not clinically depressed or anything like it; it's purely work," GP23,FsalariedLate)* and despite the pressures they were under having a severe impact on their mental wellbeing, many did not seek formal support:

*"I am normally very 'just get on with it' in life. I massively took a dive. Just very anxious, not in a way that I needed any kind of help, more so than just family and friends, but just completely changed who I was. I was a bit of a mess, much like most of us were." GP26,FtraineeEarly*

Meanwhile, a GP that did seek support had initially downplayed her feelings, until self-assessing her potential burnout:

> *"I did some wellbeing scores and thought to myself 'well, I'm probably not burnt out. But I'm really interested in burnout and I see a lot of patients in it. So I'll just do the scores', and it was like red, red, burnout. So I thought 'well, okay, maybe actually I need to take notice of the fact that I'm irritated with patients'. So made that decision really" GP34,FsalariedEst*

One GP openly described the stigma she felt relating to her own experiences of mental health. She described her preference for being treated anonymously by the Practitioner Health service, as she did not want her medical records to contain information about the difficulties she had recently experienced with her mental health. She felt angry that her experiences during COVID had led her to experience a mental health problem, as she described herself as otherwise resilient.

GPs described a tendency to continue working despite their own ill health out of concern for creating additional burden for colleagues as there is *"no buffer in the system"* (GP3,FpartnerLate). This appears to create greater pressure for GP partners, who at times work additional clinical sessions to cover colleagues' absence, but it was described across all of the groups of GPs in our sample. Other factors including staff self-isolating when waiting for COVID tests, and colleagues' mental wellbeing also impacted on participants' workload:

> *"I think we all were put under huge stress and people have gone off sick that have never been sick. And I think people have just cracked up basically, but the trouble is, it's like a domino effect" GP24,FpartnerLate*

> *"We only stay at home if we are virtually dead, okay. And I mean it. I've gone to work with a broken arm and stuff like that and that's just what we used to do. You don't take sick, you really don't." GP18,FpartnerLate*

One GP even described working (remotely) when he was suffering with COVID:

> *"I got coronavirus and I was really poorly in November, probably four weeks. I was working because I was isolating. I felt rotten, I was really tired, I was really short of breath…. And I think that was probably a poor decision, like, with hindsight. I should have probably had a week off just to recover. But felt it was bad because there was a lot more coronavirus in the community. We had lots of people off. There were lots of people isolating. And it's spreading again like wildfire. And I felt that even though I was isolating, I was fit enough to work so I was ringing people from home" GP32,MpartnerEst*

This may be a particularly difficult in smaller practices that do not have the capacity to absorb absences, as larger practices do:

> *"We certainly felt really fortunate that we had a large team. I cannot imagine doing that in a small, you know, if there had been like four or five of you… Whereas we have a lot of staff and a lot of flexibility." GP2,FsalariedEst*

One GP drew comparisons with secondary care, where there is more infrastructure to support staff absences, whereas in general practice the financial burden and pressure to support colleagues leads to presenteeism:

> *"If I were in a hospital, I'd just say, I can't come in and it'd be up to HR to find a locum or fill in or whatever. It'd make no difference to my salary, my pension, my whatever. Whereas as a GP, you're constantly thinking, what will happen, who's going to cover and I'll get no money for four weeks and even then they'll only pay 70 per cent of the cost. It's a great personal financial risk to us being off and being ill which makes that more difficult. If you're feeling under pressure and anxious or mentally unstable, it's much, much more difficult just to say, do you know what, I can't come in." GP3,FpartnerLate*

A GP that had taken time off work for mental health reasons during the pandemic described the guilt she felt in doing so, but she had concerns around making a mistake if she did not:

> *"I was very conscious. I felt unbelievably guilty, you know, as people who like to say I'm taking time off in the middle of a pandemic, not ideal, do you know, like I was very conscious of the fact that me going off work meant someone else was going to have to do all the work that I would do, but I was very aware of the fact that I was not safe to practice, and I think that that is something that our generation have had drummed into us from the first day of medical school that we are not infallible and we are responsible for the mistakes we make and we need to be aware of whether we're fit to be making them."GP20,FtraineeEarly*

##### 5.3.2.1.3 Physical symptoms

Seven GPs described difficulties with sleep, citing causes such as general concerns around the heightened anxiety caused by the pandemic and more specific concerns around about practice management at the start of the pandemic. One retired GP (GP40,Fretired) described having not suffered from migraines since retirement, but these had returned when working to help the 111 service during the pandemic. Three GPs, one of whom was experiencing long COVID, described difficulties with concentration - one had a car accident and another *"nearly fell asleep at the wheel"* (GP23,FsalariedLate). This GP also cited concerns about making mistakes due to extreme fatigue. Fatigue was widely discussed (17/40 participants) and appears to have increased over the course of the pandemic:

> *"Definitely by the time we got into the winter, I think everyone was pretty...I don't know what the best term...fatigued, just battle fatigued, change fatigued, whatever you want to call it, just all, you know, you've just done it for so long, just months and months." GP2,FsalariedEst*

##### 5.3.2.1.4 Positive emotions

Approximately half of participants (17/40) gave some positive comments when reflecting on their wellbeing during the pandemic. Many of these related to their enjoyment of work and doing a job they loved, and some felt pleased that they could leave "*the four walls of a house*" (GP1,MpartnerEst) and a welcome break from home-schooling, both of which was not possible for so many during the pandemic:

> *"Despite everything I've said, there will still be days where I'm going to work for a rest compared to being at home." GP2,FsalariedEst*

Four GPs, all recently qualified, described their work as exciting, being *"fuelled on adrenaline"* (GP4,MsalariedEarly) during this time, that they "*enjoyed the challenge"* (GP39,FsalariedEarly) and saw this as an "*opportunity to step up"* (GP4,MsalariedEarly).

Participants felt positive about the changes that the pandemic brought about, many of which had been debated for years and the pandemic had acted as a catalyst for positive change. There was also positivity around being able to focus their time according to need when demand reduced at start of pandemic, so they could be more strategic in planning care:

> *"In all honesty, that time felt really positive. It felt really refreshing. It felt empowering and as though…we'd known that general practice was struggling and not fit for purpose and we knew we needed to make some changes, but no-one could agree on the changes. And we'd been having these conversations for what, ten years? And not getting anywhere. And all of a sudden overnight we had to change, and we all did and it was fine." GP8,FsalariedEarly*

> *"What often happens in a primary care setting… the people who shout the loudest and who ask for the most, get the most. But that doesn't necessarily match where the need is. It's a demand thing, I guess. And the demand went away so we could focus on where the need was, which was brilliant." GP8,FsalariedEarly*

The COVID vaccination programme was seen as a great boost to morale; giving a sense of hope to the profession and the general public.

> *"Just having the vaccine programme has been a real morale booster, just seeing that happen, having had my own vaccine, it just feels like a really positive step compared to six months ago, maybe, going into next winter." GP2,FsalariedEst*

> *"You kind of realise why you do the job in the first place." GP4,MsalariedEarly*

#### *5.3.2.2 Pre-COVID experiences*

GPs described a range of factors that created pressure in their working lives prior to the pandemic. These are described under the subcategories below.

##### 5.3.2.2.1 Workload and complexity

Many GPs described the pressures they faced in terms of significant workloads prior to the pandemic and the impact this had on their wellbeing and work-life balance.

> *"The intensity is something, I mean, I could accept the duration, but the intensity is hard, you know, the volume of patients that we are expected to have seen." GP7,MpartnerLate*

GPs commonly used the term 'alleged' in terms of the hours they were employed to work, with nine GPs describing how work hours regularly overran into evenings or additional work days prior to COVID. There were no trends in terms of job role for this theme, with salaried and partnered GPs equally as likely to discuss this issue. There was, however, a greater tendency for this to be discussed by female GPs, with only one male GP commenting on this problem. This may be a result of greater part time working amongst female GPs.

> *"Allegedly I do seven sessions - I work all day Monday, Tuesday, Wednesday and Thursday morning - but I can't remember when I ever last had a Thursday afternoon off…. on my half*

*day Thursday, I'd come home at half past four or five o'clock and think, this is what normal people do" GP3,FpartnerLate*

There was a sense that this was an expectation when taking a job in general practice, as this had been the case for some time and *"you just get on and [do] it"* (GP3,FpartnerLate). While some GPs described working part-time in order to manage the impact of work stress, there were challenges of working part-time associated with *"doing a full-time job in the days that I was there"* (GP6,FsalariedEarly) and not being able to switch off from work. Some GPs commented on a growing tendency for GPs starting out in their careers to choose part-time working to balance work stress:

*"It's a conscious decision to try and limit the consequences of [workload], rather than doing eight sessions which I would do otherwise, I would be full-time, well full-time nominally, I mean, you could say that three days is more or less full-time in other jobs" GP7,MpartnerLate*

*"Most of my GP friends of my generation's never wanted to do ten sessions a week, but that was the culture of the time. And now it seems to have swung a lot the other way. So, some very young GPs are coping, you know, because I mentor young GPs, and my friends do too, and some of them seem to only be able to cope with two or three sessions a week, which again a bit of me thinks, gosh, is that enough general practice?" GP40,Fretired*

Meanwhile, an experienced GP partner with other portfolio roles described limiting her clinical sessions as she feared making a mistake:

*"This is why I go in one day a week. Really for my own sanity… one partner's already off sick with stress because she can't cope with it. I've never known it like this… I feel unsafe when I go to work at the practice even though I feel like I've got to go to help them because they're so desperate, but I feel like I'm going to make a mistake, although I haven't yet and they're trying to support me" GP30,FpartnerEst*

Some of the pressures of workload for partners related to the responsibilities of business management, which was voiced by 11 of 14 GP partners. They described how the needs of the practice were prioritised and it was difficult to flex with changing personal demands:

*"There is no flexibility in general practice, no flexibility… When my father was having heart attacks a couple of years before he died I literally had to… take time off, but then make up the time when I came back… I think as a salaried doctor you probably would… take unpaid leave. But it's difficult because there are the organisational needs and people can't afford it… you've got your duty of care to patients, you know? So, you feel you can't…it was difficult to get a locum. So, it's really difficult psychologically if you've got caring duties to carry on working." GP40,Fretired*

*"But like most partners, you do a lot on your days off and in the evenings." GP9,FpartnerEst*

One GP suggested that management roles were increasing for partners as a result of increasing scale of practices and forming PCNs, since they had more staff now to personally manage.

GPs commented on the increasing complexity of GP workload, with advancements in certain treatments and movement of some care out of hospitals and into the community adding additional

pressure. This created tension between primary and secondary care, which was discussed by four GPs. One described a pyramid of healthcare provision, with general practice's role gradually increasing:

> *"So at the moment we deal with the bottom bit of the pyramid and anything more serious goes to secondary care. The slow creep over the last few years, last decade even, has been for that bar to be pushed higher and higher up the pyramid so that general practice takes more and more on, more and more complex stuff with no time." GP24,FpartnerLate*

One GP reflected on the impact of delegating simpler, more routine work to other professionals within a practice, which had the effect of increasing *intensity* of GP workload:

> *"Back in the day, if you were doing a surgery, you'd have maybe 30 per cent of it would be some really complex difficult stuff… two thirds of it which was stuff you could deal with, with your brain on sort of idle, you know, it was basically routine, relatively straightforward stuff, and so a lot of that stuff was taken out and handed to a different set of practitioners within the practice, and then the GPs were left with a full day of intense, the really, the big stuff. And so a GPs working day, their working life, became more complex… there was no let up." GP17,Mretired*

##### 5.3.2.2.2 Patient perceptions

Prior to the pandemic, there was a sense that patient expectations needed to be better managed and that the government should improve messaging around general practice, as well as promoting greater use of other services and self-management.

> *"I think the real thing that would help GPs is educating the population. And I've had this thought for years now that I think the biggest problem to the NHS is expectation and nobody in government is prepared to say to people, you will not see your GP within 24 hours, you often don't need to see your GP within 24 hours, you don't see your GP at all, you can self-manage all these things, go to the local pharmacy, go online, do this… the government puts expectations on the population 'cause that's a good vote." GP3,FpartnerLate*

Two GPs described negative online commentary about GPs on Facebook or other platforms, and the impact this had on wellbeing and morale:

> *"It doesn't matter how good a GP or public servant you are, you're going to have to put up with the unpleasant, uninformed, and quite often, aggressive, just unpleasantness online. And to some extent, the people that manage general practice encourage that to an extent, by saying your GP is a service, you comment on it, like you would comment on it like you would comment on a restaurant or a sweet shop or something like that, you know, which is fine. If I was a restaurant, I could then argue against it. But, you know, with the restrictions and restrains of confidentiality… in standing up to it or defending yourself, you actually will be guilty of breaking confidence, which is the greatest sin of all." GP17,Mretired*

##### 5.3.2.2.3 Underfunding

Anger was expressed over *"empty promises"* (GP7,MpartnerLate) made by successive government health ministers, including statements about increasing the number of GPs, that had not

materialised. Some highlighted the difficulties of recruiting in general practice, even if funding were available:

> *"We can't recruit staff, we have been trying to increase, we can't get staff. Our [advanced nurse practitioner] has just resigned because we were trying to get her to do more patients and she can't cope. General practice has no capacity; if you give more money, it doesn't give you more people to do the job." GP24,FpartnerLate*

Difficulties of working in a deprived area with a large non-English speaking community were raised by one GP, who felt funding did not match need:

> *"I think in terms of particulars of our environment, yes, I mean, the work was, definitely, harder… it's very common of [deprived areas]... staff are busier because it's all underfunded, because you get...the way that GPs get paid doesn't honour deprivation or non-English speaking sufficiently." GP20,FtraineeEarly*

A retired GP described the multiple system problems and lack of investment as causing severe work stress and prompting her decision to leave general practice:

> *"Mid-career the strains of being a GP, being a GP partner, patients, staff problems, lack of investment, I worked in an inner city area in London, high demand, impossible to recruit because we weren't a high earning practice, so it was really difficult. And then, I tell you, it was…I won't use the word 'burnout', I was severely stressed, I was severely stressed. I'm thinking of giving up general practice as a career, not…I enjoyed my job, so you can't call it burnout. You know, I wasn't getting irritated with patients. I was getting irritated with, you know, the systems and lack of investment. GP40,Fretired*

Three GPs felt angry about the NHS pension issues, which they felt had penalised doctors for working additional sessions to meet patient demand. They described the resolution as a *"sticking plaster"* that would not be sufficient (GP24,FpartnerLate).

#### *5.3.2.3 Challenges during COVID*

The following section describes the various factors contributing to stress and anxiety for GPs *during* the pandemic.

##### 5.3.2.3.1 Personal risk

The majority of GPs reported anxiety and fear about their own personal risk, as well as placing family members at increased risk. This was particularly prominent at the start of the pandemic, when participants reported a heightened sense of anxiety when viewing media reports internationally.

> *"I remember my husband and I made a will, which we hadn't done before, because we had this one-year-old child and we are thinking, okay, well we are both working in general practice, we are both going to have to continue working… there was that real feeling of unknown." GP13,FtraineeEarly*

> *"Well this could affect any of us in the same way, because it was a very scary time, certainly in the first few months, yeah… when you look at these patients and you look at some of them are*

*younger patients and they're in intensive care and you look at their notes and these are fit and healthy people as well, then that is quite scary." GP14MpartnerEst*

GPs in high risk categories held particular concerns about their greater personal risk. These included older GPs, those with asthma and BAME GPs. A BAME GP felt that she was not "*particularly protected in any way, you know, they just expect you to get on with it"* (GP7,MpartnerLate). There was a sense of concern for their colleagues too. GPs felt guilty that nursing staff were less protected from patient contact, due to the necessities of patient-facing roles (e.g. taking bloods), and were anxious about colleagues' workload when having to self-isolate:

*"Bless our poor nurses, they were very much expected to carry on and that felt very uncomfortable for me within the practice because they were just expected to carry on and the GPs were kind of hiding behind the doors and heavily doing things in a non-face-to-face, and then slowly things got stopped a little bit, so limited what the practice nurses were doing and then suddenly the second wave they've continued more normal roles of what they used to." GP31,FsalariedEst*

*"Any time the kids are coughing, fevered, if they've got a symptom, it's that worry of right, now we've got to isolate. What's the impact going to be on our work, on our colleagues and I think it's that constant worry that you don't want to let anyone down because everyone's in the same boat." GP6,FsalariedEarly*

Examples of being exposed to COVID by patients and colleagues failing to report symptoms were voiced by two GPs, causing significant stress, and also infection in one case.

*"[The trainee] didn't feel that he needed to tell me that he felt unwell in the tutorial and that in that morning he'd had a temperature. I mean, this is a doctor… and so he messages me that night to say, I've had a COVID swab, I'm waiting the results, what should I do, and I said, well, you can't come in, you need to self-isolate. Anyway, turns out it was positive, but that stress was just too much" GP5,FsalariedEst*

*"I had a patient who came in with COVID… had lied about her symptoms, she said she had back pain, she actually had shortness of breath and cough, and wanted to be seen and knew she wouldn't be seen if she said she had COVID symptoms. She came in about a week later I developed shortness of breath and just walking around the house I couldn't breathe properly." GP37,MpartnerEst*

Changing guidance around implementation of hot sites, use and access to PPE caused significant concerns. GPs were frustrated and felt *"neglected"* compared to hospital colleagues as the standard of PPE they were using was not equivalent, even when working on COVID hot sites.

*"When it was the peak and we went to see…we called them the hot patients, high temperatures and stuff… reflecting back, and I was like, I was doing ABGs and all sorts and we weren't even wearing masks. This was right at the initial peak, because it wasn't mandated. It was crazy, and now to think that we have to really wear it all the time." GP10,FtraineeEarly*

*"I was also very aware that my hospital colleagues were wearing different masks, different gowns… but I was working in the COVID clinic. So I wasn't working…everyone I was seeing*

*basically had COVID and the standard of PPE that we had access to, wasn't the same." GP22,FsalariedEst*

*"The psychiatrists were being fitted with FFP3 masks, specialist masks and there are psychiatrists working at home doing telephone reviews, and us in primary care and our district nurses… going out to visit cancer people were given flimsy surgical masks and told that these will be fine, get on with it ...in fact we didn't even get proper PPE drops. We had to go and buy all the hand gel in Lidl one day… we felt disappointed that we were neglected" GP30,FpartnerEst*

#### 5.3.2.3.2 Workload

While GPs voiced concerns about workload levels prior to COVID, the majority of GPs felt their workload had increased during the pandemic.

*"It's a different world, isn't it? I mean I think I thought I was busy [before COVID], but I didn't have a clue what busy was, basically. I just can't believe the workload explosion since COVID. I just don't know what the situation is. I mean, it's bizarre. So it was busy, it was stressful [before COVID], but I had my head above water." GP24,FpartnerLate*

*"Now it feels like the system's creaking, and people are creaking as well… it's a marathon, not a sprint… it becomes a lot more difficult to kind of keep focusing that energy." GP4,MsalariedEarly*

*"I'm trying to work as much as I can, so I've gone up from doing ten hour days to…well normally 11 or 12 hour days really. But easily 14 hour days and catching up at weekends and catching…gone from maybe doing a 48 hour week to a 60 hour week, just to try and keep on top of it." GP37,MpartnerEst*

There was some discussion around the 'unmanageable' levels of contacts for on-call or duty doctors who were responsible for seeing patients with urgent care on-the-day appointments. Additionally, systems could not cope with the level of 'non-urgent' demand, with patients unable to obtain appointments within reasonable timeframes:

*"So most days there were 50 or 60 contacts on that appointment list where the RCGP says that they reckon the safe limit is about 30. So probably double. So one of the changes we brought in was the triage system. But even then, so you can work your urgent system quite well and that's the most important thing from a safety perspective. But patients will call up and say I've got tummy cramps going on for two weeks and some diarrhoea and I'd like to speak to the doctor. Perfect. You do need to speak to the doctor, you probably don't need to speak to them today, but you do need to speak to them relatively soon. So could book them an appointment within the next week? We haven't got any appointments within the next week. So you create a different problem, there's a different issue that then comes…you've saved yourself an on-the-day appointment, but the work just has to go elsewhere." GP8,FsalariedEarly*

GP partners commented on increases in workload at the start of the pandemic, when they were responsible for reading and implementing guidance (e.g. around the setting up of hot sites and keeping abreast of emerging COVID treatment evidence). They describe this as particularly time-consuming as it was evolving daily and coming from multiple sources. Similarly, there was a peak in

management work towards the end of 2020 and continuing into 2021 when planning and implementing the vaccination programme.

> *"You're trying to alter the way of consulting and keep abreast of the daily bulletins from the COVID information that we had at the beginning. And at the very beginning, we also had daily COVID meetings, just for 10-15 minutes, just to touch base and see what was changing." GP24,FpartnerLate*

There was a sense that this increased management workload was balanced out by reduced patient demand at the start of the pandemic:

> *"Patient demand fell off a cliff. It disappeared. From the first pandemic, I wouldn't say we were left alone, but it felt like that sometimes, the amount of calls and queries we get from patients were just probably less than half of what you'd expect on a month-by-month or week-by-week comparison…. so the first lockdown as I say, there was that kind of heightened anxiety and the stress about organising things. That was kind of balanced out a little bit by just the fact there was a little bit less to do in terms of like seeing people" GP2,FsalariedEst*

> *"Everybody went and left us alone for about two weeks. It was brilliant. Nobody rang up. Nobody came to see us. Nobody wanted doctors anywhere near them. It was the best GP land ever. And I say that slightly tongue in cheek, but honestly demand fell off a cliff. We were really quiet. But actually it was quite good because we managed to fill our time…well we managed to, we had to fill our time by redesigning services left, right and centre and working out what we were going to do, how we were going to manage, how we were going to see our patients, how we were going to provide a service." GP32,MpartnerEst*

Approximately half of GPs commented on some form of reduced workload, either relating to the very start of the pandemic when patients stayed away from general practice for fear of contracting COVID, the expectation that GPs were busy, or due to patients' greater self-management.

> *"I think people's ability to manage themselves and self-care has improved and let's hope that stays strong." GP3,FpartnerLate*

> *"I think we got a lot less of the kind of, some of the rubbish that people come in with, you know? …kind of minor issues like, you know, sometimes I get a bit of a stitch if I run, or if I drink too quickly. You know? Genuine consult. I've got some skin tags that I've had for years, but I don't like the look of that." GP28,MsalariedEarly*

> *"I spoke to one chap [before the pandemic] who had had a runny nose for a day who called up…I don't really need to speak to you, do I? That's a waste of an appointment, isn't it?... again before the pandemic, people coming in using a 15 minute face-to-face appointment to show you their fungal toenail, well, I don't really need to see that. I don't care about your fungal toenail, I'm sorry." GP8,FsalariedEarly*

At the time of our interviews (March-June 2021) the reduced patient demand at the start of the pandemic was viewed to have resulted in late presentations for serious pathology. 16 GPs voiced

concerns about this, both in terms of workload impact and fear for patients that added to their work stress.

> *"We are seeing really serious pathology… nine months of rectal bleeding or coughing up blood for the last six months and three or four stone weight loss, don't know why. You're thinking goodness me, why haven't these people come in?" GP37,MpartnerEst*

> *"…people sitting on cancers, literally, and then presenting with late diagnosis. So that has been stressful and sad… we know a lot of our patients haven't been coming in with certain symptoms. And in the last few months we've had quite a big influx of these patients who've come in with a ten-month history of this… haven't come 'cause they didn't want to put a burden on the NHS. And actually have gone on to have pretty bad, if not terminal diagnoses. And it's that sort of thing that actually you fear. It's the stress of knowing that's probably going to happen more and more. And then the worry that actually, that's going to just be blamed on GPs when actually a lot of that's unfortunately been unavoidable just because of what's been going on." GP6,FsalariedEarly*

One GP described a potentially avoidable patient fatality that had occurred immediately after a telephone consultation:

> *"You do miss a lot of pathology, I'm seeing people come in with advanced and aggressive cancers and tumours, with severely poorly controlled and unmanaged or undiagnosed diabetes. So, there is always in the back of my mind that there is a lot of pathology that is being missed, and it is incredibly easy to miss stuff over the phone. I was involved in a significant incident where a patient who I'd spoken to unexpectedly died half an hour after my phone consultation with him ...now if they'd been in front of me, I could well have made a different decision about sending them into hospital, but unfortunately, over the phone, there was a lot that was missed and I do feel that if that had been an in-person consultation, as opposed to a remote consultation, there would have been a better outcome for the patient." GP12,MtraineeEarly*

Locums experienced a vast reduction in demand for their work at the start of the pandemic:

> *"I had work that was planned at other practices because I locum and that just suddenly all got cancelled. So, all that work just suddenly went and disappeared overnight, I just received loads of emails from different practices saying we don't need you anymore, that's all gone."GP11,FsalariedEst*

Demand was described as being particularly difficult from the end of summer 2020 onwards.

> *"Then this wave came in July. Everyone who had kept hold of their constipation and their niggly little shoulder pain, back pain, all of those things that people had been keeping hold of and not speaking to their GP about because they were told to wait, all came in a wave." GP8,FsalariedEarly*

> *"Patient expectations slowly went up. People were like, well, we're kind of through this now; that's the worst of it. Articles in newspapers say it. Watching everyone go out and have their street parties for VE day and stuff like this. This is going to be a disaster. Because you're just*

*naturally on the inside of it. So then the patient demand just slowly went up as well. People demanding to be seen face-to-face again, saying, well, we're over the worst of it." GP2,FsalariedEst*

GPs also described additional time pressures due to cleaning and PPE:

*"The whole thing about cleaning between patients, I mean, sometimes the consideration of time management for that, and then you want people to have a safe time to do it, otherwise corners will get cut and then it becomes an unsafe environment, but it never really felt that the hierarchy really thought about it. It was just like, this is what you do and you've got to get through this number of patients and it's not simple when you've got face masks and PPE and all those things, things take longer. But there's kind of an expectation that the same pace would happen, and that's not realistic." GP31,FsalariedEst*

### *Mental health consultations*

A number of GPs mentioned increased demand from patients experiencing mental health issues. They described the challenges that the pandemic brought for many people, as well as the reduction in coping strategies available to patients. GPs found this more difficult to discuss through telephone consultations, relying solely on verbal cues. These consultations affected both workload and emotional strain, particularly as they felt unable to offer sufficient support:

*"There would be a lot of younger people who were just a bit lost" GP2,FsalariedEst*

*"When you're already feeling low yourself, and it's not a quick consultation and it's also emotionally draining. I do find a morning surgery of 20-22 people, about a third of which have got mental health, is quite gruelling." GP24,FpartnerLate*

*"Our mental health service is shocking, and I feel like I spend half my day listening to people who are just isolated and depressed and it's quite frustrating that we're doing the same thing over and over again, and nothing's getting any better… elderly patients who can't access the internet, can't get a diagnosis of dementia, which means that they can't access any services and mental health services play ping pong between themselves, so, you know, IAPT say, oh, too severe for us, and the secondary care mental health service say, oh, no, not severe enough for us, we're not dealing with that. And then they just fall into this black hole." GP35,FpartnerEst*

This was a particular problem for younger patients, for whom anti-depressants were not recommended; GPs felt at a loss to support these patients and their parents:

*"We're not supposed to prescribe an under eighteens, not that you would necessarily want to do that straight away. So options are very limited and you feel you can't refer them all to the community mental health team or the CAMHS, the child and adolescent mental health team, but parents are often ringing you out of desperation, and all we're told to offer them is a website. To go away and have a look at these websites. And actually, if you're a parent, who's at a wit's end because your child won't get out of bed or is self-harming, it almost feels like the only way to get seen is to … attempt suicide or something." GP9,FpartnerEst*

One GP described feeling as though she were constantly letting patients down and unable to help, which had impacted on her own wellbeing and job satisfaction:

> *"If you go from… one to the next of [mental health problems] and the patient's cancer diagnosis have been delayed or their treatment's been delayed as a consequence of COVID and you can't help them, and you're having to explain that on repeat all day, and obviously the patient gets frustrated with you but it's not really my fault. But if you can imagine doing that every day, all day on repeat, you can understand, why people are finding the satisfaction part of the job is harder to achieve." GP9,FpartnerEst*

*Administrative work*

GPs described a sense that there were increasing amounts of administrative work and some found it difficult to complete this within a working week. GPs who had previously attempted to complete this by the end of the working week described increasingly finding this was spilling over. This caused stress and GPs were concerned they would miss something urgent.

> *"There was always left over [admin], I didn't look at all the blood results and I haven't referred the patient and there's still letters waiting. Yes, it was like a vicious cycle." GP33,FsalariedEst*

##### 5.3.2.3.3 Practice changes

Participants described the many changes that the pandemic had brought about, including changed or new triage systems, use of remote consultations, the vaccination rollout and changes for trainee GPs. While some GPs associated these changes with stress and increased workload, there was a general sentiment that the pandemic had provided a positive impetus for change:

> *"It's progressed the NHS significantly… it's probably moved us on ten years, from where we would have been, definitely, in primary care." GP4,MsalariedEarly*

*Triage systems*

GPs described the importance of triage systems for prioritising according to patient need, rather than *"first come, first served"* (GP2,FsalariedEst), and how this eased pressures as they worked their way through patient lists compared with fixed appointment times. Triage also eased pressure if colleagues were unwell; rather than the patients from their list being reallocated across the other available GPs that day, they would be triaged according to need.

> *"We used to have just anyone ringing for anything would be put on this huge list. So even if they just had forgotten to order their medication, people will come in and be seen by a doctor. You know, taking up an appointment time. Whereas actually now that can be triaged out and we've got a pharmacist who will ring them back. So I suppose it's just more appropriately focusing on what care they need." GP1,MpartnerEst*

> *"The old system was just your patients... just had unfettered access to booking a face-to-face appointment to come and sit right in front of you, and most of that was based on a first come, first served, rather than who needed it…. if your surgery had 50 on the day appointments, the first people who were in the queue on the phone got through. And really, when you look at that with hindsight was madness." GP2,FsalariedEst*

*"There were people calling at three o'clock in the afternoon with genuine things that were really, really urgent – chest infections, tonsilitis, suicidal teenagers – all of those genuine, urgent things, and there were no appointments. But you can't say no because we have a contract, we are their doctors, we have to provide them with the urgent care that they need. And so it would just get added to the bottom of your list." GP8,FsalariedEarly*

There was, however, a perceived increase in demand due to greater accessibility through e-consultations, as some patients had found it easier to book appointments:

"*I've never known it like this. Since eConsults came in it's gone overwhelmingly busy. Well, it used to be that there were well set up systems in place that if people felt that they had a medical...you know, and a question, they could go to the system, like, the pharmacist, 111. And now eConsults have come in there's no barrier between a senior GP who should be orchestrating a complex practice, an MDT practitioner, and the patient and all those protections have gone. And now there'll be 200 eConsults on a Monday that we have to deal with as well as all the other general practice workload and the vaccination programme and PCNs, and it's just really unsustainable and unsafe." GP30,FpartnerEst*

### *Remote consultations*

There were mixed emotions around the movement to telephone and video consultations. While these created a physical challenge of working long days at a desk and computer screen, GPs also described feeling isolated and *"decision fatigue"* (GP4,MsalariedEarly) due to the repeated nature of telephone consultations. Some GPs felt that these lacked the personal touch and contact with patients, which had encouraged their career choice. There were also concerns around missed diagnoses, inequalities in access and difficulty making judgements relying solely on verbal cues. This creates complexities in clinical decision making that may be particularly difficult for early-career GPs that were still building their experience, but also late-career GPs that described problems adapting as they had *"grown up with face-to-face*" (GP18,FpartnerLate).

*"I still feel the workload's intense but it's in a different way and there's more…I feel slightly more uncomfortable because of doing more work remotely as well. So, in terms of, I worry about missing things, in terms of, you know, missing diagnoses or missing psychiatric medical problems and all the people who might not be accessing services as well" GP7,MpartnerLate*

*"you were having to use a whole different set of skills to make diagnoses and treat people." GP11,FsalariedEst*

Telephone consultations were viewed positively for those patients with minor conditions, reducing attendances and enabling more focus on face-to-face appointments. The pandemic had promoted long-overdue changes to working practices and infrastructure:

*"things we've been asking for, for ages, like give us a load of laptops that we can work on the move and work at home and there was never enough money" GP2,FsalariedEst*

*"The GPs, from the partnership, they never wanted to text message patients, they thought that was too intrusive. Lots and lots of things they really didn't want to do. And actually, today at lunchtime we were discussing it and the senior partner was saying how amazing the ability is that we get to text people. She said she uses it all the time. She said, gosh, 10 years ago I said*

*we will never do this because I thought it would be too intrusive. She said, now it's one of the best tools that's come out of it." GP1,MpartnerEst*

Use of text was widely described as a surprisingly simple and useful communication tool, which had been well-received amongst patients. There were some concerns that certain groups may be disadvantaged, for example elderly and ethnic minority groups. However, some GPs reported elderly patients being receptive to its use:

*"we've got 80-year-olds sending us photographs of rashes and stuff and she said, there's so much we can actually do over the phone. GP1,MpartnerEst*

GPs in multi-site practices covering large geographical areas described the positives of being able to share workload and support colleagues in other practices:

*"And we can also support the other practices. So if somebody in [another location] is really busy one day, some of the [local] doctors can dial in… and vice versa. So it did bring that flexibility, and I mean, doctors can work in a slightly more logistically easier way" GP27,MpartnerEst*

This was more difficult for trainees and early-career GPs who at times lacked confidence to make decisions without seeing patients and relying on verbal cues, as well as concerns regarding lack of relationships and trust:

*"it's okay if you've been a GP at that practice for 20 years, because they know your voice, they know who you are, they know what you look like. But I've spoken to so many patients or been on home visits to me, and they say, never heard of you. And you just don't get a feel for who you're speaking to, as much, on the phone." GP4,MsalariedEarly*

*"I'm taking longer than when I was doing face to face in my appointment, even if I don't ring any patients the consultation takes me longer, ten minutes is not enough because I really need to make sure that I'm safe, the patient's safe. So that's the stressful part of it." GP21,FsalariedEst*

### *Vaccination rollout*

The vaccination programme was described as a great morale booster, coming at a time when many GPs and the wider public needed a sense of hope. While GPs describe taking on additional hours in order to manage the vaccination plan, there was a sense of pulling together and pride.

*"There was a point when we were doing the 80 year olds where you had to vaccinate 14 people to save one life. And I'm feeling tearful about it even now. Like just the actual practical difference that you could make in a terrible situation." GP34,FsalariedEst*

*"I've been doing some of the vaccination clinics, and just seeing people and seeing people smiling and positive, it makes such a difference to wellbeing. And you kind of realise why you do the job in the first place." GP4,MsalariedEarly*

*"If anything the vaccine stuff has been a source of resilience because it's given people hope and a different focus and people are doing that as extra sessions." GP22,FsalariedEst*

*"The vaccine has definitely, kind of, galvanised people's feeling that they're doing something really useful in general practice." GP32,MpartnerEst*

GPs raised concerns about how messaging had been handled around the vaccination rollout. GPs had faced large increases in volumes of calls from patients trying to book vaccines, or querying side effects, which at times they felt unsure of:

*"Patient expectations, I guess, are whipped up to a frenzy by the government and by the media. You know, our phones, the day when they said if you're 50 and you haven't had your second vaccine, phone your GP – oh for god's sake, really? Our phones just did not stop. And we had staff in tears and we effectively had to stop doing shed loads of stuff because of that and it's just…whoever is doing the marketing, needs to think about the impact of stuff." GP24,FpartnerLate*

##### 5.3.2.3.4 Wider collaboration

Approximately half of GPs (17/40) discussed positives relating to the pandemic being an opportunity to foster collaboration with colleagues across PCNs, hospitals and community services, including wider services such as the fire service and army. GPs commented on a greater sense of camaraderie and improved working across PCNs, which had pulled together during the pandemic, particularly with the vaccine rollout. One GP described how having these working relationships before COVID started, was a real benefit:

*"And I think having had that year to build up good relations [in the PCN] made that a lot easier 'cause …the group dynamics were good and we'd learnt to trust each other, that was really helpful. I think if COVID had arrived and we'd had no PCNs and no friends and no neighbourhood structures, it would've been very difficult." GP3,FpartnerLate*

*"The delivery of the vaccine programme I think broadly …has been quite a seminal moment, a pivot point for primary care networks, it's brought a lot of networks together around a very defined delivery goal." GP22,FsalariedEst*

Meanwhile, GPs described greater access to specialist support from hospitals, for example through the NHSE Advice and Guidance service or 'Consultant Connect':

*"One of the advantages of the pandemic is actually getting advice or remotely from, you know, colleagues in hospitals, they're much more accessible. So, now there is a service, something called Consultant Connect, which is a great service where, literally you can just phone and ring and get through to, you know, a specialist within a minute." GP14MpartnerEst*

*"Everybody was just playing on the same team, and I really hope that some of that stays" GP20,FtraineeEarly*

Negative comments discussed relating to wider collaboration across services were made by 12 GPs and related to conflict between primary and secondary care, with GPs often feeling their hands are tied when dealing with angry and concerned patients on increasingly long hospital waiting lists. One GP described the impact this had on her wellbeing and it made her question her career:

*"I think there's been times over the last year where I've come home from work and cried and been, I don't know why I do this, I genuinely don't know why I bother doing this … And that's a mixture of a slight conflict between hospitals and GPs and patients and GPs sometimes and the media and it just wears you down sometimes." GP6,FsalariedEarly*

GPs described concern for patients on lengthy waiting lists for hospital treatment and in some cases, the closure of services during the pandemic. This had led to increased workload for GPs, who felt they were the only support for some high risk patients:

*"Eating disorder services stopped. They just stopped. So for a nine month period any new referrals, you couldn't refer. And there wasn't an alternative. So we set up a high risk list to look after the highest risk eating disorders patients. … Mental health services, closed to routine referrals. They would only see suicidal people." GP34,FsalariedEst*

*"We're seeing a large number of people who've had cancer treatment either delayed or their diagnosis delayed as a consequence of COVID particularly probably around the May, June, July, period, and it's devastating the impact it's had on these people's lives and we're picking up the pieces really. And it's really tough to do that all the time… it's probably going to be four or five years until the NHS recovers from this, but there needs to be something to support GPs pick up the pieces whilst everything comes back to normal." GP9,FpartnerEst*

*"There [was] a drop-in clinic at x-ray, go down today. That was really useful if you were particularly worried about someone but they didn't need to go to A&E, but now we have to refer to x-ray, x-ray process it and then they arrange an appointment. And, in my experience, the quickest that has happened is within a week or ten days if you put urgent all over the front of it. So, we've lost that same day access to some things, and routine ultrasounds can be around a year." GP36,FpartnerEst*

##### 5.3.2.3.5 Difficulties in teams

Challenges within teams were voiced by 18/40 participants. There were disproportionate numbers of women GPs discussing difficulties in teams (15/18). Difficulties included isolation from their teams, with some practices "*cancelling [team] huddles due to COVID*."

*"One of the biggest things that my colleagues talk about is the isolation that the pandemic has created. So general practice is a relatively isolating job because you are on your own in your room all the time." GP9,FpartnerEst*

*"It might be a reflection of people just working really hard, not…obviously you couldn't all be in the same room for a long time, so there's just not that much of a team ethos at work." GP29,FtraineeEarly*

This appears to have had a particular impact on early-career GPs, who found it difficult to integrate into newly-joined teams.

*"So the practice that I currently work at, they are incredibly COVID secure, and that means that I don't leave my room. And so, coming in as a new starter, I don't know anyone face to face at all. We have a Zoom meeting which is quite impersonal, every day, and it's ten or 12 people on screen. And so you can't have an individual conversation…. I wouldn't recognise people*

*outside of work... It's a very odd situation, because I've worked there for nine months and not met all the GPs face to face. And I've definitely struggled with that, and I find that I don't really feel like part of the team. And that's why, when they offered me a contract, I just said, it's not…this isn't for me." GP4,MsalariedEarly*

Differences in experiences of the first wave of the pandemic were reported, with some citing increased sense of camaraderie during this time, and others highlighting the sense of anxiety amongst the wider team that had impacted the work environment:

*"Camaraderie that came out of the first lockdown certainly, was tremendously supportive, but it has sort of dried up a bit and changed in the last six months maybe." GP24,FpartnerLate*

*"Right at the beginning, I think a lot of our staff members, the ones that were maybe in their 50s, health problems, the switch straight away was to this panic, the anxiety of running a healthcare setting… that impacted quite a lot on everyone because it made the work environment very tense, very stressed." GP6,FsalariedEarly*

One GP, who had worked in different practices during the pandemic, noted the variation in support available. While she felt a strength of general practice was the ability for each practice to be independent, she felt these differences could be instrumental in how well a practice fares during the pandemic:

*"I think it's one of the good things about general practice is that practices are completely individual. And I've really very much noticed that this year, working at different practices, that there's different work ethics and ethos, and teams within the practices. I'm not sure that that can be completely sorted by Government policy. I think it…as an individual employer, I think it's down to each practice to kind of sort that side of thing… is the overarching thing in practices, that are thriving and doing okay in the pandemic, versus practices that are perhaps struggling a little bit more." GP3,FpartnerLate*

##### 5.3.2.3.6 Leadership

GPs expressed frustration around how decisions had been made over the course of the pandemic, which they felt had directly risked the health service's capacity, for example: *"street parties on VE day… Boris' plans for Christmas"* (GP2,FsalariedEst). These decisions had heightened their anxiety as GPs anticipated a second and third wave. GPs also described a *"simmering discontent amongst communities"* (GP28,MsalariedEarly) that they felt had been *"whipped up to a frenzy by the government and by the media"* (GP24,FpartnerLate).

GPs described how the initial positivity they had felt from being appreciated by the public at the start of the pandemic had been eroded due to inaccurate messaging from NHS England, the government and the media:

*"As things went on, you know, I think there's been lots of problems that have been deflected to GPs. Oh, you know, the waiting time's too long. Oh, it's 'cause your GP referred you too late, or whatever. I can't get seen, it's 'cause GP surgeries are closed, you know?" GP28,MsalariedEarly*

Others described the 'clap for carers' as *"tokenistic… I'm sure people meant it in a very well-meaning way but, I think, in terms of a substitute for proper working conditions in terms of support" (GP7,MpartnerLate).* GPs described feeling *"neglected as a profession" (GP9,FpartnerEst)* and a lack of understanding as to the workload difficulties they were facing. GPs described public expectations that were unrealistic, and these were encouraged by government ministers. For example, the suggestion that GPs should provide vaccine passports to patients was remarked upon

> *"I went to some webinar thing with Nadhim Zahawi, the Vaccines Minister. And I sent a question on the thing saying how are you going to manage this passport thing? And he said, it's easy, you can just ask your GP... can you imagine even just taking 14 million telephone calls, or… And it's just that flippant, well, your doctor can just do that. Just talk to a GP. You want to start doing the Joe Wicks programme, you don't know if you're okay to do it? Talk to your GP. It's just the default position." GP34,FsalariedEst*

Retired GPs described the bureaucracy they felt existed for those GPs that wanted to return to medicine to help out. The usual suite of training requirements (e.g. fire safety, hand washing, diversity training), described as frustrating even prior to COVID, were felt to be unnecessary and prohibitive in a pandemic when working remotely. Two described volunteering with a practice and with the vaccine programme, but their offers were declined. The lengthy process for returning GPs at the start of the pandemic is described by one retired GP that had kept a record of key dates:

> *"The onboarding process took… weeks, weeks, weeks. It was so frustrating… on 20 March the GMC wrote to doctors saying, are you interested? I completed the survey straightaway… 23 March the first lockdown in the UK, and 26 March they passed the Coronavirus Act. 27th March I was granted temporary registration by the GMC, but the letters we received from NHS England, said very clearly they wanted us to work for the COVID Clinical Assessment Service [111]. So, I didn't approach my local practices to say do you want my help? So, I returned my signed contract from CCAS on 13 April… but I wasn't actually onboarded, I didn't manage to do my first shift until 14 May." GP40,Fretired*

Some GPs felt that there was insufficient support to protect general practice working conditions from the BMA and RCGP:

> *"If we had a union worth its salt, they would say GPs have to have a limit on how many patients they see, speak to, per day. But we cannot have open-ended general practice anymore, it's just had its day in my opinion." GP24,FpartnerLate*

> *"Sometimes GPs need a bit more backing from the organisations that are meant to support us, like the GPC, like the BMA, and like the Royal College of General Practice." GP28,MsalariedEarly*

GPs involved in PCN leadership suggested that there needed to be more funding to support these roles from NHS England, as they were having to juggle these responsibilities with usual clinical and practice management work.

#### 5.3.2.3.7 Public perceptions and patient interactions

Negative public perceptions of general practice was one of the most widely discussed themes in our interviews, with a total of 26 GPs describing the negative impact public perceptions had on their

wellbeing. It appears that a small, limited number of frustrated patients created additional anxiety for GPs dealing with general frustrations around access or referrals and complaints, and this grew increasingly difficult as the pandemic progressed.

> *"They sometimes become aggressive on the phone because they think that we're trying to avoid face-to-face." GP11,FsalariedEst*

> *"That's maybe putting more pressure on because patients are getting a bit more irate and they take it out on you even though it's not really you they're annoyed at. I don't know. Obviously, there's a lot of consultations you have with patients who are upset because they've got a hospital wait or this that, the other, and the only person they've got to vent that to is to the GP." GP6,FsalariedEarly*

> *"I do find it a bit frustrating when they're insinuating that you're deliberately putting up barriers because you don't care or because we're trying to have an easy life, because actually I'd say it's harder and more tiring to do telephone work than it is to just see people face-to-face and get the reassurance that they look well. So I do find that frustrating, is when people make you feel like you're not caring, when you are. It's because you care that you're having to carry on doing stuff the way we are." GP39,FsalariedEarly*

GPs described frustration and resentment for a cohort of patients that were *"ideologically opposed to the concept of a pandemic and just don't think that it applies to them*" (GP12,MtraineeEarly); patients that did not follow advice to self-isolate when consulting their GP with COVID symptoms as well as those who consult for very minor issues.

> *"It's very, very frustrating to try and care for people who don't believe in COVID." GP12,MtraineeEarly*

> *"But actually at the moment my patients are annoying me because they blame me for coronavirus, they won't look after themselves, they're ringing for the most minor trivial things at the drop of a hat and they're demanding to see us when they don't need to be seen. And I think…you know, nobody goes out of their way to be awful, but they're just being a bit awful at the moment." GP32,MpartnerEst*

GPs described negative sentiment portrayed in the media or government representatives and wide-held public sentiment that general practice had been 'closed' during the pandemic:

> *"GP bashing that you see in the media, which is demoralising on a constant basis" GP7,MpartnerLate*

> *"Without a doubt, something will be published in one of the tabloids, the following week we'll get an influx of calls from patients enquiring about what the papers have been publishing, so it doesn't really help when you're trying to do your job." GP6,FsalariedEarly*

> *"Tabloids look at us as we're making money from [vaccinations], which most of us aren't. It's just what comes in doesn't cover the cost of providing the vaccine service. But again, the public's perception is that GPs are being paid more money to deal with it." GP9,FpartnerEst*

*"That was really upsetting at one point, thinking that people thought we were closed. I was like, I've been working my socks off, I've been working at COVID hubs or I've been doing back-to-back telephone consulting six hours a day and here I am with people thinking that I'm closed. We just felt a bit like, oh no matter what we do or what we try, people just assume that we're not working hard enough." GP10,FtraineeEarly*

In contrast, positive comments were made by 16 GPs and related mostly to the outpouring of appreciation for NHS work at the beginning of the pandemic, with the majority of patients understanding the necessity of changes to practice. For some, this was a welcome change at the start of the pandemic, as previously it had been *"taken for granted"* (GP12,MtraineeEarly). Positive comments around patients also related to their greater self-management during the pandemic, though GPs were also sceptical about the reasons for fewer consultations for coughs and colds:

*"Interestingly, there's hardly any patients now contacting us about common colds and illnesses, mostly I think because they don't want to be told to self-isolate." GP11,FsalariedEst*

GPs felt that telephone consultations had been particularly well-received amongst younger patients and those working. Some practices had attempted to engage with public groups, for example via practice Facebook page to keep patients abreast of changes in remote working and triage, as one GP described:

*"The vast majority have been understanding and supportive. I put some videos on our Facebook group and things saying, you know, this is how the surgery's working, this is what we're doing and that was really well received and I think people appreciated just us being in touch and putting out those messages and things." GP3,FpartnerLate*

Another practice shared positive patient feedback across the team:

*"If a patient gives a compliment, then somebody will send it round by email, and if a special person has been named, that so-and-so was just amazing, thank you very much – and that sort of thing helps wellbeing, because it makes you, again, remember why you're doing it… if you look at the number of compliments, then actually it puts that in context. The majority of patients are really happy with what you've done." GP27,MpartnerEst*

One GP working in an area with a large Pakistani population described the difficulties they had experienced in trying to have discussions with elderly patients with multiple long-term conditions about their choices about end-of-life care and use of ventilators, if they were to contract COVID and be moved into hospital. They described the emotional strain of having these conversations and how this had been badly received by the local community, which they felt had led to a breakdown in trust:

*"[We were] trying to do this, kind of, risk assessment with patients and say, well, do you want to go into hospital if actually there's nothing they can do for you anyway, and are you going to be the best candidate for a ventilator, and we did this piece of work and it was so hard, calling all of our, kind of, vulnerable multi-morbid patients, a lot of whom don't speak English and a lot of whom are very well cared for by their families... I got to the point I said I'm not doing this anymore. I can't do it. It was too emotionally difficult, and our interpreters were just like what are you guys doing? Like this is...what are you doing, this is an awful thing to do, and that has*

*definitely come to bite us. That, definitely, contributed to, kind of, loss of trust and lots of failures of communication of, you know, we thought we were doing a good thing and it was very badly received… it was very exposing of our, kind of, cultural ignorance" GP20,FtraineeEarly*

#### 5.3.2.3.8 Personal challenges

Five GPs described the financial impact of the pandemic as there was reduced availability of locum work. One GP (GP32,MpartnerEst) from a University practice described the *"huge drop"* in practice earnings as student numbers were far lower than usual, and consequent increased stress levels: *"probably £380,000 to £400,000 worth of income."*

The challenges of home-schooling and reduced childcare was discussed by 13 GPs. There were mixed views and experiences of using family to assist with childcare; two described forming a support bubble for this purpose, while two described not seeing family due to concern about infection risk. While this was described as difficult to manage prior to the pandemic, the reduction in wrap-around care for school and nursery hours led to difficulties around balancing childcare during the pandemic. Furthermore, periods of home-schooling or self-isolation created additional pressure for GPs who described trying to conduct telephone consultations while juggling childcare. Some GPs we interviewed had chosen not to send their children to school during the first lockdown, due to heightened concern around risk at the time.

*"So I was at home trying to get through more patients than normal remotely, trying to learn the technology and I had my children at home, so it was huge. I can remember feeling just running on adrenaline and just feeling constantly stressed." GP30,FpartnerEst*

*"My daughter goes to school. She has been going to school, which is great, but it's 08:30 until 3pm …it's great to have that but then you get stuck after that, so it's been a bit tricky between us both, working that out and making sure that there's someone obviously there and not relying on other people 'cause again, we can't really currently rely on family like you would normally" GP6,FsalariedEarly*

*"I didn't know which was more tiring. I think actually home-schooling was more tiring. I volunteered to do vaccinating on a Friday purely so I could send the kids to school on a Friday so that I would only have to home-school two days. So I think it must have been… It's like childbirth, you kind of forget how bad it was, but I think the fact that I was vaccinating to avoid doing it probably meant it was pretty tiring." GP15,FretainerEarly*

These difficulties were discussed differently by male and female GPs, with two of 14 GPs commenting on this being male. Indeed, one male GP described the support received from his wife, who had been made redundant before the pandemic:

*"It's been amazing because during coronavirus I didn't have to worry about the kids, I didn't have to worry about the family, my wife, was doing it all. And that's been absolutely crucial." GP32,MpartnerEst*

#### 5.3.2.3.9 Challenges specific to trainees

In addition to the challenges described above, trainees described facing challenges of starting new roles during the pandemic, pressures of exam changes, feeling isolated and a lack of usual support mechanisms from the wider team.

> *"One of the big things I've struggled with, is sort of being chucked out at the end of GP training and left to my own* devices*." GP4,MsalariedEarly*

> *"My concern is that I haven't had a time, where I've had a run of say, 14, 15, 16 patients back to back, face to face. So normal GP practice, I haven't actually, had a run of that, which I would have done for about six months, had the pandemic not happened. So a little bit wary of that, when we end up with full waiting rooms and patients frustrated that they're waiting for half an hour, or an hour after their appointment time." GP4,MsalariedEarly*

Some GP partners described concerns around retention of trainee GPs as they felt they were protected from certain aspects of the role during training, which was not a true reflection of general practice work. This had been exacerbated further by the pandemic and one GP trainee held concerns that the general practice they had chosen had changed considerably:

> *"The breakdown in rapport, I think, is particularly tough for me as a newly qualified GP, or as a new GP to the practice. One of the main reasons I went into general practice, is that I like the continuity." GP4,MsalariedEarly*

> *"They get protected from the admin, reports. Lots of stuff they get protected from now. I think that's going to be a problem for them one day coming out the other side... what they're doing now is nothing like the work of a GP. So that's potential for a significant problem for retention. So they've already been recruited into GP training, so actually, that's not a problem. You think you're going to get your GPs from them. But I can imagine that they honestly are working so little and seeing so little, compared to what we'd seen, six months a GP at a busy surgery? You'd be seriously rethinking." GP2,FsalariedEst*

There were also concerns raised around trainees' wellbeing and feeling that they had been used *"as cannon fodder"* in frontline hospital roles:

> *"They're traumatised and they aren't happy because they feel like they've been used as cannon fodder for the last 12 months. So we're dealing with a generation, a year of doctors that are really disillusioned and upset and feel like they've not learned anything for a year. And all the consultants were sat at home doing virtual consultations and they were on the frontline, pulled out of their placements to work, to deal with all that." GP30,FpartnerEst*

> *"Major stresses for me at that time was threat of redeployment, so every day junior doctors were being pulled out of where they were and put to work elsewhere, and having just rejoiced at leaving hospital and nightshifts and pagers, I, every day, was waiting for that call and that was definitely a source of stress." GP20,FtraineeEarly*

> *"I'd get really anxious seeing patients down in A&E with suspected COVID, because obviously I didn't know what it was, everyone was anxious over it, and as juniors, we always get sent to see them. Then we'd discuss it with the reg." GP10,FtraineeEarly*

Three recently qualified GPs that came to the end of their training during the pandemic described the difficulties they faced in finding a job:

> *"Normally it is reasonably when you have finished training if you are a sensible decent doctor, it is a buyers' market. There are trillions of jobs and you just say, oh I would like that one. I came into a very different situation which is, because of the uncertainty created mainly by finances in practice, no one is hiring. No one is hiring GPs… The market changed and it is almost like no one has even mentioned it, but there were a lot of GPs that had come to the end of their training who were unemployed… I applied for all those jobs that were there… I sent my CV to I think 30 practices in the local area… I spammed all of them and everyone was like, no don't need anyone." GP26,FtraineeEarly*

#### *5.3.2.4 Facilitators*

##### 5.3.2.4.1 Informal support

The majority of GPs sought support through family and friends (28/40), colleagues (29/40) or peers (15/40). Participants described the benefits of talking to other medics, about their experiences as they could relate:

> *"My non-medical colleagues don't really get it, you know, they just they…and it's difficult for them to understand really, in terms of the environment and the intensity as well." GP7,MpartnerLate*

This was particularly important to trainees, some of whom were isolated from family and other networks:

> *"If it wasn't for the support of my own GP trainees, because some of us were in the same similar boat, I think I would have just… become even lower in mood, I think. Because the trainees were going through a similar thing, some of them, and they couldn't go back to their own families. For example, one of my friends, her family is in Ireland and they couldn't even fly back there for Christmas… So we just came in during Christmas time and helped give gifts [on the children's ward], and it was something to do to keep us occupied, otherwise we would just be sitting by ourselves at home" GP10,FtraineeEarly*

Some GPs (8/40) described accessing this support from other medics via WhatsApp groups, as well as the RCGP First5 group and social media groups such as through closed Facebook groups:

> *"So, people post, with patient's consent, photos and say oh, this, this and this, what do you guys all think. But at the same time people have posted their stories about how they're doing during the pandemic and things. And I think reading through that you get a bit of the comfort in that if you've had a bad day or something it's not just you, everyone is having bad days" GP16,MsalariedEarly*

> *"We've got a WhatsApp group for the partners… But it was a really useful way of people keeping in touch, asking the odd clinical query… you get a really quick response back from someone… superseded email in terms of queries, because you get such a quick response. Because even people who aren't at work might see it and send the answer… double-edged*

*sword sometimes, especially being one of the partners, and you're off and suddenly see something and you're like, oh" GP27,MpartnerEst*

#### 5.3.2.4.2 Teamworking

A key source of support and tool for managing wellbeing was participants' teams. 30/40 GPs cited examples of good teamworking that had a positive impact on their wellbeing and for the most part GPs described feeling like a stronger team, having come through so much together. GPs described a sense of pulling together during the pandemic and felt it had prompted positive change for GPs to focus more on personal and team mental wellbeing; historically perhaps less prioritised. As one GP explained:

> *"I think COVID has made everybody better at it. I think COVID has exposed the fact that nobody can cope with COVID. You know, people who were like, kind of, coping, nobody's coping. They were like nobody...people aren't coping. Nobody's thriving." GP20,FtraineeEarly*

Examples of positive practices included team circuit training, zoom yoga sessions and 'wellbeing weeks'. Some GPs described receiving an end of year bonus or Christmas present as a morale boost. One of the simplest and most commonly discussed supports was having informal or formal arrangements for taking breaks together. While some described these being cancelled due to social distancing rules and size of rooms limiting capacity, many practices were still meeting up and describe the benefits of being able to 'debrief' on complex cases, provide social support and share anxieties:

> *"We've got a large room where you can all sit distanced but talk about clinical cases and people and things. I actually think we did think about getting rid of that but actually, I think that's been crucial 'cause a lot of venting happens. A lot of [that sort of thing 09:24] [inaudible 09:25], I think without that and actually will be confined to our rooms the whole way through, probably wouldn't have been advisable… I think at the moment that's probably one of the best ways to cope with the stresses actually just to generally talk to other people that are doing it." GP6,FsalariedEarly*

> *"We introduced morning huddles, so that people were like actually checking in. That's a bit of a mixed blessing sometimes, they just want to crack on with the work rather than talk about how everybody's doing... maybe once every six weeks we have a clinicians' check-in to see how people are doing and that, you know, it's just...you know, it's created a bit of a culture that's helpful. We have an emotional wellbeing meeting... it has its pros and its cons. Often a group setting is not necessarily where you want to share those things, but the first time we did it was immeasurably helpful to me because I said... I feel incompetent, and I am terrified that I am going to do something based from incompetence, and two of our senior GPs who are near retirement said I feel like that most days... I was like, oh, okay, cool.... it's not just me, and that it's not just me was really very, very, liberating and helpful, yes, and that has...that was a good outcome of those." GP20,FtraineeEarly*

These shared breaks also offer an opportunity to informally raise difficulties, rather than needing to reach out, which some GPs may be less inclined to do, either due to workload pressures or stigma:

*"It is a long-standing thing and it's been really helpful the whole way through [the pandemic] actually. Even pre pandemic stuff because you can casually ask for advice or for help with a situation rather than, you know, formally going to have a big chat about something." GP13,FtraineeEarly*

This was also important to one GP, who had moved practices during the pandemic and wanted to feel part of a good team:

*"In my new practice, that was the first question I asked when I went there. I thought, number one, I really need a job but, number two, I am not just going to work anywhere. I said, do you actually [meet] each other for coffee at any stage during the day to talk over cases, because that is how you get jobs done, you can't know everything. They said yes and I thought, this is the place for me." GP26,FtraineeEarly*

One large practice described having a Wellbeing Lead, who led a team of GPs with wellbeing roles across all the practices in the group and promoted wellbeing activities including, for example: sharing information; promoting team exercise challenges; guest speakers on zoom. The focus of this was preventative: *"They promote resources to keep people going, but not just crisis services… not just focused on...you've gone over the cliff, what are we going to do?"* (GP2,FsalariedEst). This is perhaps more feasible as part of a larger group of practices, as this GP acknowledged the cost and time involved:

*"But it's difficult to resource that. You've got to decide where that money is coming from and what you're not going to spend it on"* GP2,FsalariedEst

This large practice had set up virtual 'check in' sessions led by mental health practitioners during the pandemic. These sessions, held weekly, were 20 minute group discussions that any staff from the practices could opt into and discuss challenges of their day and promote wellbeing. There was, however, insufficient demand, so the service ended:

*"The feedback we got was quite positive from the people that did use it. But there was quite a lot of resistance to it in that a lot of people said that they didn't feel that they needed it. A lot of the admin team felt kind of pressured and what they had to say wasn't as valid as what the clinicians had to say." GP8,FsalariedEarly*

Another GP voiced the benefits of working at scale, in terms of support available:

*"If you'd have asked me ten years ago, do you want to work for a big practice? I would have said, probably not. But, actually, having a big practice means that we have an HR department, we have an IT department. We have all these other people that support us with our role so, actually, we can just get on and do the day job and other people can take the weight of some of the other stuff, that's really important."GP36,FpartnerEst*

##### 5.3.2.4.3 Formal support

There appeared to be good awareness of the different support structures available for GPs, ranging from coaching and mentoring support (for example the Looking After You Too campaign from NHS England), through to more formal clinical support for GPs struggling with mental health problems. Thirteen participants discussed coaching or mentoring and those that had used these services were

very positive about the support they had received in difficult times. They described the benefit of these being *"for GPs, run by GPs"* (GP29,FtraineeEarly) and being able to *"crystallise my… sort of my wellbeing… like a flash bulb moment"* (GP40,Fretired) through talking about potential solutions and priorities. A retired GP explained that while some returning GPs did not assist clinically during the pandemic, they offered peer support through mentoring or coaching programmes. There were gender differences in discussion around use of these formal support services, with only two male participants discussing this.

While in the minority, two GPs referred to this being more about signposting than an active encouragement to engage in these services:

> *"We get these daily emails now, they're like long sagas, from the lead partner. And every few weeks there's something, you know, don't forget wellbeing, and if you're having problems, this is the link. It's more signposting to things that are out there." GP15,FretainerEarly*

Nine GPs (seven female) discussed using clinical support for mental health reasons at some point in their careers, five (all female) seeking help during the pandemic. . Apart from gender differences, there were no other trends in terms of these participants' characteristics or job role. Support was accessed either via their own GP (sometimes with medication), a professional counsellor or through the Practitioner Health Service. GPs were very positive in their discussion of the Practitioner Health Service:

> *"They were amazing. I don't think I would have, I had anxiety and depression for years, and I don't think I would have got through it without their help." GP28,MsalariedEarly*

##### 5.3.2.4.4 Strategies to manage wellbeing

Aside from seeking formal and informal support, GPs were aware of the importance of 'self-care' and 17/40 GPs described the strategies they adopted to manage their wellbeing. There was a gender imbalance in GPs discussion around 'self-care;' with only three male GPs discussing this topic. Exercise was by far the most commonly discussed strategy. Others included talking to friends and family, gardening or generally spending time outside, dog walking and time for meditation and mindfulness.

GPs also discussed approaches to managing their time in order to protect their wellbeing, including taking regular breaks, using annual leave and trying to leave work on time.

> *"It's only during this time that I've realised that those breaks were my lifeline, and they were the things that kept me going, feeling refreshed and feeling like coming back to something again and recognising that it's okay, there's going to be a break at another point, and it will help and make me feel myself again. GP11,FsalariedEst*

> *"I have started to feel a bit more burnt out in the last few weeks, and I think if I didn't have this one month chunk of time off to kind of reset, recalibrate, and really be selfish and do whatever I want to do for a month, which may well be nothing, but, you know, having that choice is kind of important, I think if it wasn't for knowing that that was on the horizon, I probably would have to have conversations with work about how much I'm doing, or even get in touch with the Practitioner Health programme." GP28,MsalariedEarly*

However, one GP described this as a difficult balance:

> *"You either protect yourself and don't do the job you necessarily want to do, or you do it and you burn yourself out." GP20,FtraineeEarly*

One GP was working as a GP retainer through the NHS England scheme, and another GP was considering exploring this scheme further as it was seen as a way to reduce pressure of number and length of appointments over the working day. The GP retainer described how it had made it possible for her to continue working with three young children and reduce the pressure of coming out of training and "*being a GP proper*." She described feeling less guilt as her role was partly funded by NHS England:

> *"NHS England pays like a huge portion of my salary, so you don't feel so guilty because you think well, you are being paid. In reality, I have less work, but because I'm newly qualified, stuff takes longer because you don't know as much so you're not as efficient." GP15,FretainerEarly*

##### 5.3.2.4.5 Portfolio careers and part time working

GPs discussed developing portfolio careers and reducing their clinical sessions in order to manage work pressure and support their wellbeing, as well as enabling time for other activities, such as training or teaching. For some, they felt that if they hadn't have made this choice, they would have left medicine.

> *"So I only work three sessions, and the reason for that is… I'm busy the rest of my time. It's just because I physically can't do those sessions. They are brutal and that's the most that I've found I could tolerate without being ill essentially… Ten years ago, I worked eight sessions. I didn't find that difficult. But if I tried to work eight sessions now, I would literally fall over. It wouldn't be feasible." GP34,FsalariedEst*

> *"I do some management [one day per week]. It's really boring but I do some management stuff. And the balance and the variation gives me a bit of headspace." GP32,MpartnerEst*

While the numbers are small (eight GPs discussed this), only two were men. On average, across the sample the number of clinical sessions for men and women GPs were similar (median: 6 for both), but there was greater variation for women (female IQR: 3.0, male IQR: 1.88) as some women had low numbers of clinical sessions and only 2 of the 12 GPs reporting working fewer than 6 sessions per week were male.

Portfolio careers offered an opportunity to have a break from clinical workload which was described as 'relentless', and provided variation that some GPs enjoyed. Roles included teaching, mentoring, coaching, research, local roles in PCNs, LMCs or CCGs, roles on national advisory committees such as through NHS England or RCGP. Five GPs described the positive impact the pandemic had had on their ability to attend wider learning, with opportunities now available via various online platforms rather than requiring travel time.

> *"Education-wise, for me accessing education because it's been Zoom, I can do it in the evening, so I don't have to worry about managing where my son is, I couldn't do those things before." GP31,FsalariedEst*

#### *5.3.2.5 Policy Insights*

Participants' comments could be broadly viewed as serving the purpose of reducing GP workload and improving employment conditions through various means at a system-level (including societal, political and economic factors) and an organisational level.

The most common responses at a system level related to attracting and retaining GPs (18/40), changing GP culture towards wellbeing (17/40), increased funding (16/40), managing patient expectations and messaging (13/40), improving the appraisal system (13/40) and wellbeing initiatives (21/40). At an organisational level, the most commonly cited improvements related to well-being initiatives (24) better integration with secondary care (7), the implementation of the Additional Roles Reimbursement Scheme (4) and better support for trainers and trainees (3).

Other areas mentioned by a small number of GPs included; reduced bureaucracy in relation to attainment of patient related targets, mandatory training and reporting requirements; more control to implement beneficial outcomes quickly, without PCN approval; and finally, political intervention to improve *"societal resilience, societal wellbeing"(*GP32,MpartnerEst).

##### 5.3.2.5.1 Attracting and retaining staff

In relation to recruitment, GPs (9/40) expressed concerns that the increased workload resulting from the pandemic would act as a deterrent to new entrants. Female GPs in particular expressed their need for more flexible working arrangements. The pandemic was seen to have worsened the retention of people approaching retirement (mid to late 50s). Issues such as lifetime allowances for pensions, a perceived movement away from face-to-face towards digital consulting and a difficulty in reducing clinical sessions were seen as factors that could push GPs into early retirement.

Late career GPs suggested it would be useful to offer a phased retirement stage, similar to the pilot scheme Career Plus, where their knowledge and experience could be utilised for a longer period while they experienced reduced workload and stress burden.

> *"I'm 59, I'm planning to go 'til 60 which makes me stand out as a very strange creature, which is, I guess, why I'm behind and everybody else has gone. But I actually think that is very, very sad, because you have this large cohort of doctors who are still physically fine, who have a wealth of experience and they're all voting with their feet. And there isn't a mechanism that would allow them to stay on." GP18,FpartnerLate*

There was a suggestion that the GP retainer scheme could be widened to support other groups of GPs, such as those experiencing health difficulties, to remain in post. One GP noted the lack of overall responsibility for this area within individual primary care networks.

> *"On that retainer scheme, there are three or four reasons why you can join it, but I don't see why a mental health problem or a physical health problem couldn't be one of them. Or even just you've come from training and you feel you need more supervision. I do think that should be accessible for a lot more people other than just young mothers." GP15,FretainerEarly*

##### 5.3.2.5.2 Cultural change around wellbeing

The majority of views (16/40) suggested a need for more preventative measures to support wellbeing rather than the current approach when services became available at the point of crisis.

*"I think a lot of things are set up to be kind of a short, sharp intervention. If people come early enough, that may be enough, but doctors and GP's in particular, we're very kind of stoic, we accept that life is going to be a little bit rubbish, and I think we seek help a bit too late." GP28,MsalariedEarly*

Most stressed the need to approach wellbeing as a systemic issue, largely connected to workload. They were disenchanted with initiatives that seek to improve their resilience and felt that there needed to be greater infrastructure support to prevent presenteeism. Two GPs suggested these difficulties should be highlighted better in GP training.

*"There's no point talking about wellbeing if you've got an unsustainable system that everyone is working at 100 miles an hour and there's no slack. You can't just magic wellbeing up by talking about it. You have to actually change the system." GP27,MpartnerEst*

One GP thought there was a need for a more localised offer which they suggested might increase awareness and take up of potentially beneficial wellbeing initiatives.

*"It would be good to have some more health and wellbeing stuff going on locally that actually it's more of a culture thing because there are some of these things going on but nobody knows about them and if I was to say, oh, can I have half a day off to go and attend the workshop on mindfulness or something, it would not be encouraged and be frowned upon, even coaching, it's not encouraged." GP38,FsalariedEst*

##### 5.3.2.5.3 Increased funding

GPs suggested that investing in more doctors would help to increase access and enable longer appointments which would in turn enhance both patient and clinician satisfaction.

*"In terms of local Government policy, I think it comes down to workload, I think, a lot of the time the places that I've been most satisfied working in, are places that allow the time that patients need, rather than what you're allocated." GP4,MsalariedEarly*

Other areas mentioned by individual GPs that required investment were: targeted support for the housebound population, managerial support for clinician PCN leaders and improvements to buildings and infrastructure.

##### 5.3.2.5.4 Managing patient expectations

GPs (12/40) mentioned a pressing need to educate patients on the appropriate use of primary care services to avoid misuse and ensure resources were available for those most in need.

*"I think the real thing that would help GPs is educating the population. And I've had this thought for years now that I think the biggest problem to the NHS is expectation and nobody in government is prepared to say to people, you will not see your GP within 24 hours, you often don't need to see your GP within 24 hours, you don't see your GP at all, you can self-manage all these things, go to the local pharmacy, go online." GP36,FpartnerEst*

Communication about delays in out-patient appointments and routine surgery due to allocation of resources to fight COVID was also seen as vital. GP's wanted better Government campaigns encouraging health awareness about common illnesses, such as diabetes, and more signposting to

more appropriate specialists, rather than the stock solution being 'go see your GP'(GP34,FsalariedEst).

> *"We need to have honest, open comms related to delays in out-patient and routine surgery. Patients need to know, not from us but from hospitals, from NHS England, CCGs, when to expect their appointments. And, who they can contact if there are having worsening symptoms, because I can't deal with someone who has worsening Crohn's disease symptoms that has had their colonoscopy cancelled, but maybe one of the IBD nurses can." GP36,FpartnerEst*

#### 5.3.2.5.5 Media and messaging

Almost all GPs in the study were dismayed by a media narrative they termed 'GP bashing'. They felt organisations that represent them, principally the BMA and RCGP, should be more vocal in counteracting inaccuracies in the media. GP's felt these bodies ought to stand up for the profession and highlight positive achievements, for example the swift transition to remote working and role in vaccination campaign.

> *"I think that will be a really big morale boost to show what the role of a GP was within the pandemic and what we've done and just how we've been so pivotal for the vaccination campaign. And I think that on its own would boost the profession so much, because it just feels like this constant bashing of us in the press" GP9,FpartnerEst*

The other most frequent response was the need for consistency in Government messaging.

> *"It is getting the right message out; yes, your GP is open for urgent issues, but remember you're in a pandemic and if it's something small or something that's routine then, you know, respect the fact that they're very busy doing other things at the moment and try not to bring these things for now." GP14MpartnerEst*

A growing area of concern was the need for a mechanism to tackle complaints posted on social media. Two GP's talked about the potential for damaging repercussions for GP's reputation and the increased administrative workload in responding to complainants.

> *"I had to answer a complaint from a family who were all over social media complaining that their father had been diagnosed with cancer, and they'd not been able to get a home visit for years. I answered the complaint in writing to them. They'd had 53 professionals, over the last 12 months look over their father, but they can say what they like on Facebook, and we can't come back and say, this is actually what's happened." GP35,FpartnerEst*

#### 5.3.2.5.6 Appraisal System

The current appraisal system was seen as in need of improvement by 13/40 GPs. The requirement to collect evidence was seen as time consuming and added to workload stress.

> *"What I do not like is all the documentation that you have to provide to show that you're up-to-date with CPD and that you've done significant events and that you've done audit, I just hate that, and I think most GPs leave it till the last week. But if it was just a case of someone checking in on you and saying, tell me what you've done, that would be great." GP5,FsalariedEst*

Some GPs were critical of the focus on professional development. Some (8) thought the different approach during the pandemic towards a concern with wellbeing was positive and hoped that would be retained going forward. However, it was suggested that GP wellbeing should be considered throughout the year and not become a box to tick in an annual appraisal.

> *"So, they were all like, how have you been feeling in this past year, how do you rate it one to ten and what are your thoughts on the next year and stuff. Having that to discuss at the appraisal I just didn't feel the pressure to make sure you do your 50 hours of learning. My appraisal was really focused on it, that's one I would like them to carry on with ideally." GP11,FsalariedEst*

Respondents agreed that appraisal's effectiveness depended on the rapport with the appraiser. Opinion was divided on who made the best appraiser. Some felt it should be conducted by someone outside the practice, due to concerns about discussing personal issues with colleagues. Others felt it was more beneficial if conducted by a colleague who knew their personal circumstances well.

#### 5.3.2.5.7 Wellbeing initiatives

The need for easy access to talking therapies and preventative support for health and wellbeing in order to prevent a potential crisis was highlighted by eight GPs. Many highlighted the importance of these services to be easily accessible out of hours and preferably without a GP referral. They wanted the support to be provided by someone with specialist knowledge about working as a GP.

> *"Giving them protective time to be able to get to these. There's no point offering it and then you can't get to any of these things, something at the evenings and weekends as well. The practitioner health programme, I think, is a positive…But the thing is, why wait until GPs are at that level where they need to access, you know, medical or psychiatric support" GP7,MpartnerLate*

Having reflection time, a regular dedicated time to talk with someone about the impact of their work on their wellbeing built into their work schedule was mentioned by three GPs.

> *"That's about how you're coping, your mental health and how the stress is affecting you and what you're feeling about it, just so that there's some monitoring, so you don't all get to the stage where you're literally burnt out before seeking help, I think that's not healthy" GP16,MsalariedEarly*

Several salaried GPs felt neglected by practice management and suggested that provision of small gestures, including free tea and coffee, parking and team social events would go a long way to improve morale; this was being done in some practices and was described as having a beneficial effect. GPs (8/40) suggested that having the ability to close the surgery for a half day in order to spend time with colleagues, either on educational, wellbeing or social activities would be the most helpful support at present, following a prolonged period of social isolation from colleagues.

> *"To have all your team in one room together, it feels almost bizarre and too good to be true, but that would just be really lovely I think, and I think that would help bring us together." GP39,FsalariedEarly*

Other wellbeing initiatives mentioned by individual GPs included coaching services, wellbeing themed webinars and return to work mentoring following periods of stress-related leave. Provision of resources, including physical space, and availability of GP time were seen as essential components in a commissioning framework to support wellbeing initiatives. A number of GPs felt that the need for support in this area was already well recognised but there is a lack in urgency by Government and senior leaders to both fund and employ ideas.

#### *5.3.2.6 Future Plans*

Participants described various changes they were considering in their working lives to cope with challenges they described and limit impact on their wellbeing. The most common of these was reducing hours, either in terms of full-time equivalent or in terms of clinical work. Portfolio careers were seen as an opportunity to achieve greater balance, while others planned to specialise (7), take on locum work (5), work abroad (2) and three were planning to retire.

## 5.4 Summary

We interviewed 40 GPs spread across England and with different personal and practice characteristics, to provide in-depth accounts of their experiences during the COVID-19 pandemic and outline how this affected their mental health and wellbeing. Participants described key sources of pressure *before* the pandemic that affected their wellbeing, including perceived underfunding and staff shortages, high workload and negative patient perceptions. The GPs' insights suggest the pandemic has exacerbated many of these difficulties and almost all GPs reported experiencing low motivation and dissatisfaction with work. Some experienced more serious mental health issues relating to stress, anxiety and burnout, with some GPs (all female) report seeking formal clinical support for mental health problems during the pandemic. While citing that the pandemic was in some ways a catalyst for positive change, the start of the pandemic created significant stress for GPs responsible for instigating rapid change at a time of heightened anxiety relating to personal risk and general uncertainty. Pressures changed as the pandemic evolved, with stress reported in relation to unmet patient need, delayed presentations and growing demand, particularly for mental health support.

Negative patient perceptions and media portrayal of practices being 'closed' during this time increased GPs' work stress and reduced their job satisfaction. There were calls for improved public relations from leadership bodies in order to counteract inaccuracies in the media. GPs felt that improved health literacy was needed to educate patients on appropriate use of GP services, particularly as the uptake of e-consultation services was perceived as increasing patient demand.

GPs commented on a greater sense of camaraderie and improved working across Primary Care Networks (PCNs), which had pulled together during the pandemic, particularly with the vaccine rollout. The importance of team working was stressed by many, with some examples of good practice. This may be particularly important for GP trainees, who had felt particularly isolated and may require further support when working remotely. GPs described a culture of presenteeism and, for some, a sense of stigma around their own mental health, exacerbated during the pandemic due to staff absences.

# 6. Discussion

## 6.1 Statement of principal findings

There has been much recent public debate and numerous anecdotal reports around NHS staff wellbeing. Adopting a mixed methods approach we reviewed international and UK literature and explored how the pandemic has affected GPs' wellbeing in England during the COVID-19 pandemic.

Our review identified common problems amongst GPs internationally, and potential sources of pressure that were exacerbated by the pandemic. Trivedi (2020) reported increased stress scores in Leicestershire GPs at the start of the pandemic, although this is based on GPs' retrospective judgements, which may be subject to recall bias. Elsewhere, work-related stress and high rates of depression, anxiety and fear have been reported internationally (Amerio et al. 2020, Di Monte et al. 2020, Filfilan et al. 2020, Gokdemir et al. 2020, Hilbert et al. 2020, Lau et al. 2020, Lee et al. 2020, Monterrosa-Castro et al. 2020, Ortega-Galan et al. 2020, Rossi et al. 2020, Ta et al. 2020, Trivedi et al. 2020, Tse et al. 2020, Verhoeven et al. 2020, Baptista et al. 2021, Castelli et al. 2021, Dutour et al. 2021, Jahan et al. 2021, Lange et al. 2021, Lau et al. 2021, Monterrosa-Castro et al. 2021, Stafie et al. 2021, Vilovic et al. 2021, Yin et al. 2021, Zeng et al. 2021).

These international reports, coupled with our own data from social media and qualitative interviews, illustrate a GP workforce that the BMA and RCGP describe as being *"physically and psychologically drained"* during the pandemic (BMA et al. 2021). In our interviews with GPs, these difficulties had led some to needing to take time off work and seek formal support. During the pandemic, Gerada (2020) cites a 60% increase in new registrations to the Practitioner Health Service (a mental health service for health professionals). Understanding the key sources of stress for GPs during this time is important as we move to a different stage of the pandemic and attempt to learn lessons to protect the future wellbeing of the workforce. This formed one of the objectives of this research.

General practice underwent wholesale changes during the pandemic, rapidly changing how consultations were delivered, implementing long-awaited technological improvements and launching new triage systems; all while managing evolving guidelines and a background level of uncertainty that GPs described as unprecedented. Our social media analysis and interviews revealed a sense of pride in the contribution of general practice to the pandemic response, not least to the vaccination programme. Teams have worked together across PCNs and there has been an increase in camaraderie within some practices alongside efforts to support wellbeing.

Nevertheless, GPs also described how the pandemic brought about additional work stress. In both social media and qualitative interviews, GPs reported anxiety relating to personal risk and infecting family members at the beginning of the pandemic, made worse by reported inadequacies of PPE and feeling siloed compared to secondary care colleagues. Increasing patient demand from autumn 2020 created additional pressure as patients presented late, and GPs report emotional strain of not always being able to help patients, particularly reporting rising numbers of patients seeking support for mental health problems. A 2018 survey of GPs suggests a that 40% of GP appointments relate to mental health conditions (MIND 2018).

GPs appear to be less forthcoming in discussing their personal experiences of mental health and wellbeing via social media, as commentaries in this form generally related to colleagues' wellbeing. This may relate to a potential stigma around mental health. Our interviews suggest GPs may be reluctant to discuss or acknowledge such problems, and many cited issues with presenteeism in general practice. In a recently published mental wellbeing charter, the BMA acknowledges this stigma and urges employers to tackle it by promoting a positive culture around mental health and wellbeing that encourages help-seeking behaviour (BMA 2021).

In addition to exploring general pressures faced by GPs during the pandemic, our research objectives sought to identify the experiences of key groups, including GP partners, trainees and retired GPs. Our interviews revealed differences in challenges faced by these groups, which may warrant consideration as to how to best support GPs in future.

GP trainees and recently qualified GPs described particular challenges of remote consultations, as they lacked confidence and experience, which led to greater anxiety, fatigue and lowered job satisfaction. They also describe fears around being brought out of their GP training to support the frontline COVID response in hospitals, particularly isolation from practice teams, feeling disgruntled regarding exams changes and concerned about the reduced supply of jobs during the pandemic.

Our review identified that older age may be related to higher stress (Filfilan et al. 2020, Vilovic et al. 2021, Zeng et al. 2021) and GP partners we interviewed described greater pressures associated with management workload, exacerbated by the need for planning at the start of the pandemic and for the vaccine programme. They report the impact of staff shortages on their own wellbeing, describing this as a *"domino effect"* whereby increasing levels of sickness and staff self-isolating made it more difficult to manage workload, creating additional burden for those remaining.

Though we only interviewed two GPs that returned to practice during the pandemic, they reported bureaucratic barriers to them doing so, which had inhibited others.

We found different effects of the pandemic on the wellbeing of men and women GPs in international literature identified in the review, as well as through our qualitative interviews. Seven studies report greater problems with psychological wellbeing amongst women GPs: in terms of stress (Ortega-Galan et al. 2020, Dutour et al. 2021, Lange et al. 2021, Stafie et al. 2021, Vilovic et al. 2021), burnout (Baptista et al. 2021, Lange et al. 2021, Stafie et al. 2021), anxiety and depression (Monterrosa-Castro et al. 2020) Vilovic et al. (2021), PTSD (Lange et al. 2021, Vilovic et al. 2021). Our interviews suggest a tendency for more women to report difficulties associated with unpredictable working hours, personal pressures of home-schooling and childcare during the pandemic and difficulties in teams. Furthermore, all of the participants that had sought formal mental health support during the pandemic were women. Women also reported working fewer clinical sessions, and while this finding is not new (Jefferson et al. 2015), they were also more likely to report plans to reduce clinical sessions or take on portfolio working in the future. Soares (2021) also reported greater job strain amongst women doctors in dual-doctor marriages during the pandemic.

## 6.2 Strengths and limitations

The research outlined in this report is novel: we have undertaken the first review of international evidence exploring the effect of the COVID-19 pandemic on GP wellbeing, used innovative methods of analysing social media to explore GP wellbeing and conducted the first qualitative interview study

exploring GPs experiences during the pandemic over the whole of England. The mixed-methods nature of the design enables each study to complement the other; for example, the social media data is broad in scope and sample size, but limited in depth of content, in contrast to the qualitative interviews which provide rich and contextualised understanding to support these findings.

Our findings are necessarily limited to the point in time that data collection ceased. Our second systematic search of the international literature shows that this is a rapidly emerging field of research; we identified more studies in the second search than the first and we have since identified a further study from Singapore (Lum et al. 2021). Our social media and interview analyses highlight trends in challenges faced by GPs over the course of the pandemic, and of course there may be further challenges that have arisen since our data collection (up to January 2021 for social media analysis and June 2021 for interviews). For example, further tensions arose in May 2021 due to a repeated call from NHSE for GP practices to be 'open,'(NHS England 2021) and GP workload resulting from public misconceptions around the incorrect use of lateral flow testing for symptomatic patients was just beginning to be discussed in our social media data. Further research could be undertaken to explore changes in sentiment and evolving challenges as the pandemic progresses.

Our analysis of social media, as with all social media research, is limited by its content. Online personas may not be representative of individuals offline and GPs may be strategic in how and what they post. GPs have in the past been sued for discussing patients through such forums. Carville (2020) suggests they may also be cautious in discussing workplace issues for fear of disciplinary action (Carville et al. 2020). GPs in our sample appeared to share their general views and opinions openly, but there was a tendency for them to refer to experiences and concerns around the wellbeing of colleagues, public access to GP services or public mental health rather than discussing their own personal experiences. This demonstrates the benefit of undertaking detailed qualitative interviews alongside this work, as GPs in interviews were, in contrast, forthcoming about their own personal experiences of mental health.

There may be limitations in terms of the representativeness of this research. In relation to our Twitter analysis, social media users tend to be younger (Sloan et al. 2015) and have a higher level of education compared to the general population (Sloan et al. 2013, Sloan et al. 2015, Wojcik S 2019). In other respects, such as gender, race and ethnicity they tend to reflect the GP population (Sloan et al. 2013, Wojcik S 2019). Although we identified GPs from different ethnic groups and regions, our social media sample was somewhat over-representative of GPs who are white, male, and living in London. Our qualitative interviews did not seek to achieve generalisability, as this is not an aim of qualitative research, which seeks to develop detailed understanding of phenomena, but nevertheless our GP interview findings were consistent with each other, and support our review and social media findings. We sampled GPs for interviews purposively using a variety of recruitment methods to include GPs from different career stages, gender, work roles and locations. The overwhelming response from the GP community to participate in this research made it possible to select interviewees according to these pre-specified criteria.

## 6.3 Implications for policy and practice

The effects of the pandemic on GP wellbeing have been outlined, but there are wider impacts on GP retention, quality of care and patient safety highlighted in this work that also stress the need for policy recommendations at national and local levels. GP interviewees described plans to reduce their

working hours, contributions to clinical work and had plans to take on locum work, work abroad or retire. Some GPs described feelings characteristic of burnout and raised concerns around quality of patient care. In the GMC (2019) report 'Caring for doctors, caring for patients', West and Coia describe three core needs that must be met in order to ensure wellbeing and motivation at work – summarised as the 'ABC of doctors' core needs'. Based on self-determination theory developed by Deci and Ryan (1985), this suggests that organisations effectively meeting doctors' needs of autonomy, belonging and competence will thrive and support doctors' and the patients and communities they serve (GMC 2019). Figure 4 describes these components, and we use them here to outline recommendations for policy and practice.

Autonomy/control – the need to have control over our work lives, and to act consistently with our work and life values.

Belonging – the need to be connected to, cared for, and caring of others around us in the workplace and to feel valued, respected and supported.

Competence – the need to experience effectiveness and deliver valued outcomes, such as high-quality care.

*Figure 4: The ABC of doctors' core needs (GMC 2019)*

### 6.3.1 Autonomy/control

The pandemic has presented clear challenges to GPs' ability to control and influence their work; a facet that West and Coia highlight as key to doctors' wellbeing (GMC 2019). While some of this was unavoidable at the start of the pandemic, when doctors describe pressures of rapidly adapting working practices and a background level of uncertainty, GPs may have struggled to control their working lives for some time, due to excessive workload and insufficient staffing. Internationally, Morgantini et al (2020) surveyed doctors from various healthcare settings and countries and report higher than usual rates of burnout, described as being related to high workload, job stress, time pressure and limited organisational support.

Our research suggests doctors may struggle to make time for rest breaks, but those practices we interviewed that do facilitate breaks describe the benefits to their wellbeing and a greater sense of support from team members. Practices should be supported to enable these breaks, in order to provide rest from the increasing quantity and complexity of workload and foster good working relationships. Various recommendations have been made to this effect (e.g. (GMC 2019, BMA 2021), with workforce wellbeing clearly on the agenda of the BMA and RCGP, but GPs indicate that workload pressures prohibit some from taking breaks.

Our research suggests that multidisciplinary teams are being used to a greater extent during the pandemic as a result of improved ability to triage patients to the correct health professional. The recently launched Additional Roles Reimbursement Scheme (ARRS) set out in the 2020/21 GP contract (NHS England and NHS Improvement 2020) should help direct some patients to other primary care practitioners, though this may also lead to an increasing complexity of cases seen by GPs. This further highlights the importance of sufficient infrastructure to allow longer consultation times and adequate breaks. Aquilina (2021) highlights the appetite to continue working in non-

clinical roles amongst many retired GPs, and sees this as a potential opportunity to reduce the burden on practising GPs. Several of Aquilina's recommendations are supported by our interview findings, including the use of retired GPs as part of the ARRS scheme, as well as other roles that interviewees described as attractive to GPs increasingly pursuing portfolio careers, such as training and mentoring roles (Aquilina 2021). To promote retention amongst late-career GPs, our interviewees suggested offering a phased retirement stage, similar to the pilot scheme Career Plus, where their knowledge and experience could be utilised for a longer period while they experienced reduced workload and stress. Interviewees also promoted greater use of the GP retainer scheme.

### 6.3.2 Belonging

The importance of effective, ideally multidisciplinary, teams is stressed by West and Coia as this promotes a sense of belonging and improves doctor wellbeing (GMC 2019). Our research highlights GPs' desire to be part of wider networks as a source of support and sharing of knowledge. International evidence identified in our review highlights the importance of strong teams as support mechanisms during the pandemic (Monterrosa-Castro et al. 2020, Ta et al. 2020, Xu et al. 2020, Dutour et al. 2021). Our social media analysis suggests there may be a disentangled network of support during the pandemic, with social media perhaps being used more to partially replace this support structure. Our interviews show the importance of good teams to support GP wellbeing, as well as offering infrastructure to support staff absences, both during and beyond the pandemic.

There is growing support for working at scale in general practice (Gerada 2021) and the recently published Health and Care Bill (UK Parliament 2021) may provide an opportunity to reinforce the closer collaboration across multiple stakeholders that some have described during the pandemic. The Bill creates legislative change to ensure the development of Integrated Care Systems and Integrated Care Boards that will bring together NHS, mental health services and social care in local areas in England (UK Parliament 2021). Our research suggests COVID has provided an opportunity to foster these collaborations across providers and highlights the importance of building sustainable networks of GPs. These may not only benefit from working together strategically, but may also provide shared workload and infrastructure across these groups of practices. Our interviewees from larger practices highlighted the benefits of working at scale, including access to HR and IT support, sharing tasks and balancing staffing pressures when team members are absent. This may help to overcome what was described by interviewees as longstanding issues of presenteeism in general practice.

Culture and leadership in general practice needs to provide a nurturing environment that promotes staff wellbeing and a compassionate culture (GMC 2019). Our research highlights the importance of this, since GPs described stigma around mental health, a tendency to downplay symptoms and continuing work despite mental or physical ill health. Some practices were described as having wellbeing champions, responsible for promoting the health and wellbeing of practice employees. The BMA highlight the important role of such wellbeing champions (BMA 2021), although this needs sufficient infrastructure, which may be difficult in struggling teams or smaller practices. The RCGP and BMA offer various tools and evidence-based guidelines to help support GP wellbeing (e.g.BMA 2021, Royal College of General Practitioners 2021), though our research suggests that at an individual level, GPs may feel stigma in accessing support, and support may vary at practice level.

Integration with secondary care also has an important role to play in a wider sense of belonging to an NHS team. Mixed experiences of working between general practice and secondary care were reported in studies identified in our systematic review (Verhoeven et al. 2020, Xu et al. 2020, Dutour et al. 2021) and our interviews with GPs. Some report that the pandemic had improved connectivity, for example through the NHSE Advice and Guidance service (NHS England 2021) and similar online services (Consultant connect 2021), and due to the initial reduced workload in some hospital specialties. This may perhaps offer an opportunity to improve some of the historical difficulties in relationships between primary and secondary care. There have been recent calls for greater exposure to general practice during doctor training (Gerada 2021); a sentiment echoed in our GP interviews as a tool to improve hospital doctors' understanding of working lives in general practice.

During the first six months of the pandemic, the GMC appraisal process was suspended and then altered to provide an abbreviated version and a new focus on wellbeing (Academy of Medical Royal Colleges 2020). GP interviewees described this move positively, and expressed a desire for this to be continued. There were, however, concerns that an annual discussion on this topic was insufficient and could potentially limit rapport with an appraiser, limiting openness. Opinion was divided as to who made the best appraiser; some GPs felt this needed to be removed from the practice, while others welcomed an opportunity to discuss these issues with someone familiar.

### 6.3.3 Competence

West and Coia suggest that all organisations need to review workload to ensure they do not exceed doctors' capacity to deliver safe, high quality care (GMC 2019). Our research has highlighted how GPs feel that their workload exceeds their capacity; what Gerada describes as a workforce in crisis (Gerada 2021). GP interviewees held concerns that their wellbeing may be affecting their work, reporting signs characteristic of burnout including becoming more impatient with patients as the day progressed, feeling less sympathy and worrying about making mistakes. GPs also highlighted that sufficient time also needs to be allocated, and funded, to support the time needed to undertake wider roles at a PCN level.

While perhaps not easily resolved due to difficulties in increasing GP numbers, some policy developments aim to address capacity in general practice. The use of alternative roles in general practice is hoped to enable GPs to better manage workload, although this relies on an adequate supply of professionals in these roles, and it should be accompanied by evaluation of its costs and effectiveness. New technologies advanced during the pandemic, including 'total triage' are hoped to offer an opportunity to better allocate care according to need. While the government have suggested plans to embed the 'total triage' system across England from 2021/22 (NHS England and Improvement 2021), the RCGP (2021) urge caution since this also has not been formally evaluated. There are concerns around widening inequalities, informed patient and practice choice around the types of systems used (RCGP 2021). There is also a clear training need around provision of remote consultations, particularly for early-career and trainee GPs who reported a lack of confidence in remote consultations. Our research suggests that GPs may also experience increased demand for minor cases previously self-managed due to greater accessibility. Further research is needed to evaluate these systems.

Our research demonstrates the influence of public sentiment on GPs' morale and wellbeing. At the start of the pandemic and during the vaccine rollout GPs commented positively about the boost this

gave them, while later challenges of negative media portrayal and patient misconceptions of general practice being 'closed' negatively impacted their wellbeing. Salisbury (2021) suggests there has been a lack of trust of general practice and micro-management during the pandemic. The pandemic may offer an opportunity to build on the civic partnerships seen during the vaccine rollout, to strengthen communities and public perceptions of primary care. The importance of patient participation and involvement in the development of Integrated Care Systems has been recently stressed as an opportunity to reset relationships between the public and health services (King's Fund 2021a, Naylor 2021) and a guide has been prepared to highlight how ICSs can learn from people and communities (King's Fund 2021b). Our research supports the suggestion that greater patient engagement is needed. Furthermore, in relation to patient perceptions, GPs called for the Royal College of General Practice and British Medical Association to engage in a coordinated effort to improve public relations as a result of 'GP bashing' during the pandemic. This affected morale, with some GPs questioning their future careers. While these groups have published coordinated guidance during the pandemic which stresses general practice is 'open' (BMA et al. 2021), our findings suggest GPs feel more needs to be done.

## 6.4 Further research

Further research could be undertaken to examine these findings using a large longitudinal cohort sample, for example through the 2021 UK GP Worklife Survey, so that comparisons can be drawn across pre-, during and post-pandemic times. This analysis should consider the differential effect on particular subgroups of GPs that were identified in our interviews and international research as being particularly at risk to mental health problems during the pandemic - including women, early-career or trainee GPs and GP partners.

Gender differences in experiences are noteworthy, though there is also a possibility that women may be more inclined to discuss mental health difficulties and seek support. This could be as a result of true gender differences in experiences, for example women reported more pressures of children being at home self-isolating or home-schooling, or a cohort effect as a result of older and more stoic GPs tending to be male. The expansion in numbers of women in medicine is relatively recent, with equal numbers in general practice only since 2012 (Jefferson et al. 2015). Either way, this may warrant further exploration as our review demonstrates a body of international literature identifying these gender differences in psychological wellbeing and female GPs we interviewed were also more inclined to consider reducing clinical sessions following their experiences in the pandemic.

The key challenges outlined by GP partners relating to management responsibilities and pressures due to staff absences could for some, potentially be alleviated through working at scale across larger practice groups and building positive working teams. Further research could explore how practices can adapt to working at scale by looking at examples of best practice. Research could explore the implementation of the BMA wellbeing charter (BMA 2021) across practices and identify impact on GP wellbeing.

Large datasets such as the Clinical Practice Research Datalink (CPRD), which provides anonymised patient records for approximately 6.9% of the UK population (Herrett et al. 2015), could also be exploited to explore the impact of the pandemic on mental health consultations. These were described by GPs as increasing in number during the pandemic, particularly during the second wave in 2021. This dataset has been used to demonstrate the levels of unmet demand in the system, for

example the reduction in referrals to secondary care are estimated at 4.5m over the course of 2020, with an estimated 250,000 fewer referrals to the cancer two-week wait pathway during 2020 (Health Foundation 2021).

Future research studies should clearly define what is being referred to when using the term 'burnout,' since it is used frequently in headline articles describing negative GP wellbeing but can have multiple meanings with different consequences. Maslach (2016) defines burnout as comprising three dimensions: overwhelming exhaustion, feelings of cynicism or detachment, and ineffectiveness or lack of personal accomplishment. In contrast, media discussion on this topic has used this term to refer to various facets such as being overworked, needing time off, continuing to work while unwell and wider mental health disorders.

# 7. Conclusion

COVID-19 has presented many challenges and additional pressures on the GP workforce, which was already described as being 'in crisis' before the pandemic (King's Fund 2019). While GP mental health and wellbeing has been the focus of a growing international evidence base and much UK public debate, our own primary research findings provide the first national insights into GP experiences in England. Our social media analysis and interviews revealed considerable problems affecting the wellbeing of GPs during the pandemic, which may impact more widely on quality of care, staffing and workforce retention. Nevertheless, the pandemic has also provided a positive impetus to change working systems, increased team-working and has placed a spotlight on staff wellbeing. Through the insights offered in this mixed methods research, we demonstrate a need for policy that focuses on supporting GPs and providing preventative measures. Collaborations across wider teams has been bolstered in the pandemic and vaccine rollout, potentially creating a greater sense of belonging and opportunity to share workload. Engaging patients and the public in the development of ICSs could potentially strengthen communities and reduce the negative patient perceptions that many GPs voiced as impacting their wellbeing through social media and our interviews. Further research is needed to explore these findings in wider samples through more quantitative methods, preferably with some comparison to pre-pandemic wellbeing scores.

## 8. Patient and Public Involvement

Throughout this project we have held meetings with members of the Steering Committee (including three Patient and Public Involvement (PPI) representatives) to share and discuss findings as they emerge. PPI members have been engaged and provided useful contributions to these discussions. While the direct impact of these study findings will be on GPs, the patient representatives have helped steer discussions around how the research may affect patients. We have been mindful to consider how best to disseminate the findings of this research to wider groups, including patients, in particular how to encourage patients to consider their GPs without in any way dissuading people from accessing care. We have engaged with our PPI group to explore how best this may be achieved. Patients' awareness of the issues facing GPs may be important, indeed a key finding of this research relates to negative public and patient perceptions and the effect on GP morale during the pandemic. We therefore held a meeting with PPI representatives in August 2021 to discuss how we may co-produce a patient-facing tool to do this and are currently exploring options of illustrative tools for this.

## 9. Equality and diversity

Through the design and delivery of this project we have attempted to produce research that reflects the diversity of the population of GPs. Our systematic review was not limited by country or language, and therefore reflects research internationally. Our social media analysis was inclusive of all GP characteristics and the sample demographics are broadly similar to those nationally (see Chapter 4). Our interview participants were sampled purposively to represent a variety of perspectives, capturing variability in age, gender and ethnicity.

## 10. Outputs

The following outputs have been published or submitted:

Jefferson, L., Golder, S., Dale, V., Essex, H., McHugh, E., Bloor, K. (2021) Systematic review protocol exploring the impact of COVID-19 pandemic on the wellbeing of general practitioners. *MedRxiv.* doi: https://doi.org/10.1101/2021.08.05.21261627

Golder, S., Jefferson, L., McHugh, E., Essex, H., Heathcote, C., Castro Avila, A., van der Feltz Cornelis, C., Bloor, K *(submitted to PlosONE August 2021)* General practitioner perspectives and wellbeing during the COVID-19 pandemic: a mixed method social media analysis.

Further outputs presenting the review and qualitative findings are in preparation and will be submitted to peer reviewed journals.

## 11. Policy relevance

Please see section 6.3 for this discussion

## 12. Dissemination

Our systematic review protocol is available publicly through MedRxiv. We have three articles for submission to peer-reviewed journals drafted or in preparation, summarising the review, social media analysis and interviews.

On 4 August 2021 we had a co-production meeting to discuss the findings of this research with patient representatives from our PPI panel. From this we are now in the process of developing an infographic with a graphic designer and will in future consider developing a video or podcast to disseminate our findings to a public audience.

Our steering committee includes individuals from Royal College of General Practitioners and advisors on workforce wellbeing, with whom we will share our findings in a final meeting on 8th September 2021. A meeting to share findings with policy makers from DHSC is planned on 21st September 2021.

## 13. Actual and anticipated impact

Through this research project we aim to inform policy development on GP wellbeing, which could potentially affect the working lives of GPs and primary care teams, and through this provide benefits to patients and the health care system by sustaining the primary care workforce into the future.

Our report details the challenges GPs faced during the COVID-19 pandemic, and changes to their working lives which had both positive and negative impacts. Among other potential routes to impact, we hope that our research will inform the process of GP appraisals, which have a new focus on doctors' health and wellbeing.

Throughout this project we have been in regular contact with representatives of the Royal College of General Practitioners (RCGP), and we plan to disseminate the findings from this work through RCGP and to national policy makers. We have also engaged with policy makers from NHS England involved in the delivery of the 'Looking After You Too' campaign.

## 14. Intellectual property

There are no IP outputs arising from this work.

# Appendix A: Databases searches

### Embase <1974 to 2020 November 18>

### Original search: 19/11/2020

The terms for the coronavirus element were shared by NICE https://kfh.libraryservices.nhs.uk/covid-19-coronavirus/for-lks-staff/literature-searches/

---

1 exp job stress/ or exp burnout/ or health workforce/ (29326)
2 exp occupational health/ (232398)
3 stress/ or mental stress/ or anxiety/ or distress syndrome/ or health/ or mental health/ or wellbeing/ or psychological well-being/ (846260)
4 emotional stress/ or work-life balance/ or posttraumatic stress disorder/ or mental stress/ or wellbeing/ or psychological well-being/ or coping behavior/ or stress management/ or insomnia/ (361335)
5 (burnout or burn out or workload or work load or job satisfaction or stress* or work life or worklife).mp. (1490928)
6 (well being or wellbeing or stress* or distress or burnout or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention or resilience).mp. (4288368)
7 (exhaustion or work related or psychological or coping or psychiatric morbidit* or posttrauma* or trauma*).mp. (1418027)
8 (fatigue or occupational health or mental health or pressure* or sleep or insomnia).mp. (2296793)
9 or/1-8 (7164586)
10 exp Coronavirinae/ (21826)
11 coronavirus infection/ or severe acute respiratory syndrome/ (21520)
12 ((corona* or corono*) adj1 (virus* or viral* or virinae*)).ti,ab,kw. (1819)
13 (coronavirus* or coronovirus* or coronavirinae* or Coronavirus* or Coronovirus* or Wuhan* or Hubei* or Huanan or "2019-nCoV" or 2019nCoV or nCoV2019 or "nCoV-2019" or "COVID-19" or COVID19 or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or "SARS-CoV-2" or "SARSCoV-2" or "SARSCoV2" or "SARS-CoV2" or SARSCov19 or "SARS-Cov19" or "SARSCov-19" or "SARS-Cov-19" or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*).ti,ab,kw. (92687)
14 (((respiratory* adj2 (symptom* or disease* or illness* or condition*)) or "seafood market*" or "food market*") adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw. (773)
15 ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (China* or Chinese* or Huanan*)).mp. (126)
16 "severe acute respiratory syndrome*".ti,ab,kw. (13650)
17 or/10-16 (104242)
18 general practice/ or general practitioner/ (168671)
19 exp primary health care/ (174478)
20 ((family or general) adj2 (doctor? or medicine or medical practitioner? or medical practice? or practice? or practitioner? or physician$)).mp. (242736)
21 (primary adj2 (care or health care or healthcare or medical care or patient care)).mp. (247569)
22 (professional* or staff or worker* or frontline or doctor* or practitioner* or physician*).mp. (1937662)
23 21 and 22 (120014)
24 18 or 19 or 20 or 23 (399099)
25 9 and 17 and 24 (473)

### Update search: 03/06/2021

1 exp job stress/ or exp burnout/ or health workforce/ (32259)
2 exp occupational health/ (236916)
3 stress/ or mental stress/ or anxiety/ or distress syndrome/ or health/ or mental health/ or wellbeing/ or psychological well-being/ (871220)
4 emotional stress/ or work-life balance/ or posttraumatic stress disorder/ or mental stress/ or wellbeing/ or psychological well-being/ or coping behavior/ or stress management/ or insomnia/ (377410)
5 (burnout or burn out or workload or work load or job satisfaction or stress* or work life or worklife).mp. (1548907)
6 (well being or wellbeing or stress* or distress or burnout or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention or resilience).mp. (4438832)
7 (exhaustion or work related or psychological or coping or psychiatric morbidit* or posttrauma* or trauma*).mp. (1454368)
8 (fatigue or occupational health or mental health or pressure* or sleep or insomnia).mp. (2376235)

9 or/1-8 (7386344)
10 exp Coronavirinae/ (51787)
11 coronavirus infection/ or severe acute respiratory syndrome/ (22186)
12 ((corona* or corono*) adj1 (virus* or viral* or virinae*)).ti,ab,kw. (2781)
13 (coronavirus* or coronovirus* or coronavirinae* or Coronavirus* or Coronovirus* or Wuhan* or Hubei* or Huanan or "2019-nCoV" or 2019nCoV or nCoV2019 or "nCoV-2019" or "COVID-19" or COVID19 or "CORVID-19" or CORVID19 or "WN-CoV" or
WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or "SARS-CoV-2" or "SARSCoV-2" or "SARSCoV2" or
"SARS-CoV2" or SARSCov19 or "SARS-Cov19" or "SARSCov-19" or "SARS-Cov-19" or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*).ti,ab,kw. (157067)
14 (((respiratory* adj2 (symptom* or disease* or illness* or condition*)) or "seafood market*" or "food market*") adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw. (844)
15 ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (China* or Chinese* or Huanan*)).mp. (144)
16 "severe acute respiratory syndrome*".ti,ab,kw. (20876)
17 or/10-16 (170138)
18 general practice/ or general practitioner/ (172167)
19 exp primary health care/ (180910)
20 ((family or general) adj2 (doctor? or medicine or medical practitioner? or medical practice? or practice? or practitioner? or physician$)).mp. (248221)
21 (primary adj2 (care or health care or healthcare or medical care or patient care)).mp. (257370)
22 (professional* or staff or worker* or frontline or doctor* or practitioner* or physician*).mp. (1999613)
23 21 and 22 (124189)
24 18 or 19 or 20 or 23 (410740)
25 9 and 17 and 24 (1060)
26 25 and 2021$.dc. (540)
27 25 and "202012$".dc. (73)
28 25 and 20201119$.dc. (9)
29 25 and 2020112$.dc. (17)
30 25 and 2020113$.dc. (2)
31 or/26-30 (641)

Emerging Sources Citation Index (ESCI) --2015-present
Original search: 19/11/2020
---
#1 TS=(stress* OR Burnout OR "occupational health" OR "Work-Life" OR psychological OR fatigue OR anxiety OR distress OR "mental health" OR trauma OR adaptation OR "emotional adjustment" OR sleep OR "burn out" OR workload or "work load" OR "job satisfaction" OR worklife OR "well being" OR wellbeing OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention OR resilience OR exhaustion OR "work related" OR coping OR "psychiatric morbidit*" OR posttrauma* OR pressure* OR insomnia) 288,808

#2 TS=("COVID-19" or COVID19 or “COVID-2019*” or 2019nCoV or “2019-nCoV” or "Corona Virus" or Coronavirus* or coronovirus* or coronavirinae* or "CoV 2" or CoV2 or COVID or nCoV* or SARS2* or SARSCoV* or "SARS-CoV*) or Wuhan* or Hubei* or Huanan or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or " Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*) 9,026

#3 TS=("general practice" OR "primary care physicians" OR "family practice" OR "family physicians" OR "primary health care") 4,759

#4 TS=((family OR general) NEAR/2 (doctor* OR medicine OR “medical practitioner*” OR “medical practice*” OR practice* OR practitioner* OR physician*) ) 6,540

#5 TS=((primary) NEAR/2 (care OR “health care” OR healthcare OR “medical care” or “patient care”) ) 9,070

#6 TS=(professional* OR staff OR worker* OR frontline OR doctor* OR practitioner* OR physician*) 137,934

#7 #6 AND #5 4,543

#8 #7 OR #4 OR #3 10,934

#9 #8 AND #2 AND #1 29

Update Search: 03/06/2021

---

#1 TS=(stress* OR Burnout OR "occupational health" OR "Work-Life" OR psychological OR fatigue OR anxiety OR distress OR "mental health" OR trauma OR adaptation OR "emotional adjustment" OR sleep OR "burn out" OR workload or "work load" OR "job satisfaction" OR worklife OR "well being" OR wellbeing OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention OR resilience OR exhaustion OR "work related" OR coping OR "psychiatric morbidit*" OR posttrauma* OR pressure* OR insomnia) 332,218

#2 TS=("COVID-19" or COVID19 or "COVID-2019*" or 2019nCoV or "2019-nCoV" or "Corona Virus" or Coronavirus* or coronovirus* or coronavirinae* or "CoV 2" or CoV2 or COVID or nCoV* or SARS2* or SARSCoV* or "SARS-CoV*) or Wuhan* or Hubei* or Huanan or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or " Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*) 24,307

#3 TS=("general practice" OR "primary care physicians" OR "family practice" OR "family physicians" OR "primary health care") 5,673

#4 TS=((family OR general) NEAR/2 (doctor* OR medicine OR "medical practitioner*" OR "medical practice*" OR practice* OR practitioner* OR physician*) ) 7,638

#5 TS=((primary) NEAR/2 (care OR "health care" OR healthcare OR "medical care" or "patient care") ) 10,908

#6 TS=(professional* OR staff OR worker* OR frontline OR doctor* OR practitioner* OR physician*) 158,729

#7 #6 AND #5 5,432

#8 #7 OR #4 OR #3 12,895

#9 #8 AND #2 AND #1 111

Google Scholar https://scholar.google.com/

This search was carried out in three stages due to the character limit of 256 per entry. Most records were duplicates between the three search results. The first 10 pages (100 records) were sifted for each of the three searches and any potentially relevant records were entered into the Endnote Library. We erred on the side of caution and those records not kept were not about the topic area for example, GPS systems or solely regarding patient health.
Original Searched: 20/11/2020, Update search: 03/06/2021

---

*Search 1*
("COVID-19"|COVID19|"Corona Virus"|Coronavirus|COVID) AND (GP|GPs|"general practitioner"|"general practitioners") AND (stress|burnout|"burn out"|"mental health"|"Work life"|fatigue|anxiety|distress|trauma|psychological|sleep|workload|"work load")
*Search 2*
("COVID-19"|COVID19|"Corona Virus"|Coronavirus|COVID) AND (GP|GPs|"general practitioner"|"general practitioners") AND (worklife|"well being"|wellbeing|strain|burden|absenteeism|turnover|retention|resilience|exhaustion|"work related"|coping|psychiatric)
*Search 3*
("COVID-19"|COVID19|"Corona Virus"|Coronavirus|COVID) AND (GP|GPs|"general practitioner"|"general practitioners") AND (posttrauma|pressure|stressful|insomnia|satisfaction)

MEDLINE(R) and Epub Ahead of Print, In-Process & Other Non-Indexed Citations and Daily <1946 to November 17, 2020>

Original search: 19/11/2020

The terms for the coronavirus element were shared by NICE https://kfh.libraryservices.nhs.uk/covid-19-coronavirus/for-lks-staff/literature-searches/

---
1 Occupational Stress/ or Burnout, Professional/ (13968)
2 occupational health/ or Work-Life Balance/ (34560)
3 stress, psychological/ or burnout, psychological/ or compassion fatigue/ or anxiety/ or psychological distress/ or health/ or mental health/ or exp "Trauma and Stressor Related Disorders"/ or adaptation, psychological/ or emotional adjustment/ or "Sleep Initiation and Maintenance Disorders"/ (367003)
4 (burnout or burn out or workload or work load or job satisfaction or stress* or work life or worklife).mp. (1095918)/
/5 (well being or wellbeing or distress or burnout or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention or resilience).mp. (2148588)
6 (exhaustion or work related or psychological or coping or psychiatric morbidit* or posttrauma* or trauma*).mp. (1042301)
7 (fatigue or occupational health or mental health or pressure* or sleep or insomnia).mp. (1752324)
8 or/1-7 (5042402)
9 exp coronavirus/ (42432)
10 coronavirus infections/ or severe acute respiratory syndrome/ (45188)
11 ((corona* or corono*) adj1 (virus* or viral* or virinae*)).ti,ab,kw. (2062)
12 (coronavirus* or coronovirus* or coronavirinae* or Coronavirus* or Coronovirus* or Wuhan* or Hubei* or Huanan or "2019-nCoV" or 2019nCoV or nCoV2019 or "nCoV-2019" or "COVID-19" or COVID19 or "CORVID-19" or CORVID19 or "WN-CoV" or
WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or "SARS-CoV-2" or "SARSCoV-2" or "SARSCoV2" or
"SARS-CoV2" or SARSCov19 or "SARS-Cov19" or "SARSCov-19" or "SARS-Cov-19" or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*).ti,ab,kw. (90794)
13 (((respiratory* adj2 (symptom* or disease* or illness* or condition*)) or "seafood market*" or "food market*") adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw. (623)
14 ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (China* or Chinese* or Huanan*)).mp. (122)
15 "severe acute respiratory syndrome*".ti,ab,kw. (13495)
16 or/9-15 (100144)
17 general practice/ or physicians, primary care/ (17092)
18 family practice/ or physicians, family/ or primary health care/ (149971)
19 ((family or general) adj2 (doctor? or medicine or medical practitioner? or medical practice? or practice? or practitioner? or physician$)).mp. (173782)
20 (primary adj2 (care or health care or healthcare or medical care or patient care)).mp. (171195)
21 (professional* or staff or worker* or frontline or doctor* or practitioner* or physician*).mp. (1449420)
22 20 and 21 (85278)
23 17 or 18 or 19 or 22 (267368)
24 8 and 16 and 23 (223)

### Update search: 03/06/2021

1 Occupational Stress/ or Burnout, Professional/ (15317)
2 occupational health/ or Work-Life Balance/ (35507)
3 stress, psychological/ or burnout, psychological/ or compassion fatigue/ or anxiety/ or psychological distress/ or health/ or mental health/ or exp "Trauma and Stressor Related Disorders"/ or adaptation, psychological/ or emotional adjustment/ or "Sleep Initiation and Maintenance Disorders"/ (381646)
4 (burnout or burn out or workload or work load or job satisfaction or stress* or work life or worklife).mp. (1145489)
5 (well being or wellbeing or distress or burnout or anxie* or anxious* or depress* or satisfaction or strain or burden or absent* or turnover or retention or resilience).mp. (2235514)
6 (exhaustion or work related or psychological or coping or psychiatric morbidit* or posttrauma* or trauma*).mp. (1080280)
7 (fatigue or occupational health or mental health or pressure* or sleep or insomnia).mp. (1809029)
8 or/1-7 (5221759)
9 exp coronavirus/ (75653)
10 coronavirus infections/ or severe acute respiratory syndrome/ (49287)
11 ((corona* or corono*) adj1 (virus* or viral* or virinae*)).ti,ab,kw. (3115)
12 (coronavirus* or coronovirus* or coronavirinae* or Coronavirus* or Coronovirus* or Wuhan* or Hubei* or Huanan or "2019-nCoV" or 2019nCoV or nCoV2019 or "nCoV-2019" or "COVID-19" or COVID19 or "CORVID-19" or CORVID19 or "WN-CoV" or
WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or "SARS-CoV-2" or "SARSCoV-2" or

"SARSCoV2" or
"SARS-CoV2" or SARSCov19 or "SARS-Cov19" or "SARSCov-19" or "SARS-Cov-19" or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*).ti,ab,kw. (155387)
13 (((respiratory* adj2 (symptom* or disease* or illness* or condition*)) or "seafood market*" or "food market*") adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).ti,ab,kw. (713)
14 ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (China* or Chinese* or Huanan*)).mp. (153)
15 "severe acute respiratory syndrome*".ti,ab,kw. (21266)
16 or/9-15 (166280)
17 general practice/ or physicians, primary care/ (17660)
18 family practice/ or physicians, family/ or primary health care/ (153079)
19 ((family or general) adj2 (doctor? or medicine or medical practitioner? or medical practice? or practice? or practitioner? or physician$)).mp. (177384)
20 (primary adj2 (care or health care or healthcare or medical care or patient care)).mp. (178206)
21 (professional* or staff or worker* or frontline or doctor* or practitioner* or physician*).mp. (1500401)
22 20 and 21 (88488)
23 17 or 18 or 19 or 22 (274534)
24 8 and 16 and 23 (536)
25 24 and 2021$.dt. (239)
26 24 and 2020?12$.dt. (55)
27 24 and 2020?11?3$.dt. (8)
28 24 and 2020?11?2$.dt. (21)
29 24 and 2020?11?19$.dt. (2)
30 25 or 26 or 27 or 28 or 29 (305)

### MedRxiv: the preprint server for health sciences

Original search: 20/11/2020, Update search: 03/06/2021
This database is available at https://www.medrxiv.org/search. We however used an app which allowed more sophisticated searching https://mcguinlu.shinyapps.io/medrxivr/

Three topics were searched for. This database is caps sensitive so the search strategy was adapted accordingly;
---

*Topic 1*
[Cc]oronavirus
COVID
[Cc]ovid
\\bncov\\b
\\bNCOV\\b

*Topic 2*
GP
[Gg]eneral [Pp]ractitioner
[Ff]amily [Pp]ractitioner
[Gg]eneral [Pp]hysician
[Ff]amily [Pp]hysician
[Gg]eneral [Dd]octor
[Ff]amily [Dd]octor
[Gg]eneral [Mm]edical [Pp]ractitioner
[Ff]amily [Mm]edical [Pp]ractitioner
[Gg]eneral [Mm]edicine
[Ff]amily [Mm]edicine
[Gg]eneral [Mm]edical [Pp]ractice
[Ff]amily [Mm]edical [Pp]ractice
[Gg]eneral [Dd] [Pp]ractice
[Ff]amily [Dd] [Pp]ractice
[Pp]rimary [Cc]are
[Pp]rimary [Hh]ealth [Cc]are
[Pp]rimary [Hh]healthcare
[Pp]rimary [Mm]edical [Cc]are
[Pp]rimary [Pp]atient [Cc]are

*Topic 3*
[Aa]bsenteeism
[Aa]nxiety
[Bb]urden
[Bb]urn out
[Bb]urnout
[Cc]oping
[Dd]istress
[Ee]xhaustion
[Ff]atigue
[Ii]insomnia
[Mm]ental [Hh]ealth
[Pp]osttrauma
[Pp]ressure
[Pp]sychiatric
[Pp]sychological
[Rr]esilience
[Rr]etention
[Ss]atisfaction
[Ss]leep
[Ss]train
[Ss]tress
[Ss]tressful
[Tt]rauma
[Tt]urnover
[Ww]ell [Bb]eing
[Ww]ellbeing
[Ww]ork [Ll]ife
[Ww]ork [Ll]oad
[Ww]ork [Rr]elated
[Ww]orklife
[Ww]orkload

APA PsycInfo <2002 to November Week 2 2020>
Original Search: 19/11/2020
---
1 occupational stress/ or emotional exhaustion/ or work-life balance/ or compassion fatigue/ (15687)
2 occupational health/ or work related illnesses/ (3722)
3 stress/ or distress/ or exp posttraumatic/ or stress disorder/ or psychological stress/ or well being/ or mental health/ or coping behavior/ or health/ or anxiety/ or insomnia/ (239989)
4 (burnout or burn out or workload or work load or job satisfaction or stress* or work life or worklife).mp. (238977)
5 (well being or wellbeing or distress or burnout or anxie* or anxious* or depress* or satisfaction or strain* or burden or absent* or turnover or retention or resilience).mp. (611267)
6 (exhaustion or work related or psychological or coping or psychiatric morbidit* or posttrauma* or trauma*).mp. (373878)
7 (fatigue or occupational health or mental health or pressure* or sleep or insomnia).mp. (280634)
8 or/1-7 (1048460)
9 exp coronavirus/ (1472)
10 coronavirus infections/ or severe acute respiratory syndrome/ (223)
11 ((corona* or corono*) adj1 (virus* or viral* or virinae*)).mp. (51)
12 (coronavirus* or coronovirus* or coronavirinae* or Coronavirus* or Coronovirus* or Wuhan* or Hubei* or Huanan or "2019-nCoV" or 2019nCoV or nCoV2019 or "nCoV-2019" or "COVID-19" or COVID19 or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or "SARS-CoV-2" or "SARSCoV-2" or "SARSCoV2" or
"SARS-CoV2" or SARSCov19 or "SARS-Cov19" or "SARSCov-19" or "SARS-Cov-19" or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*).mp. (2840)
13 (((respiratory* adj2 (symptom* or disease* or illness* or condition*)) or "seafood market*" or "food market*") adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).mp. (19)
14 ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (China* or Chinese* or Huanan*)).mp. (66)
15 "severe acute respiratory syndrome*".mp. (387)
16 or/9-15 (3189)
17 general practitioners/ (4455)

18 family physicians/ or primary health care/ (16521)
19 ((family or general) adj2 (doctor? or medicine or medical practitioner? or medical practice? or practice? or practitioner? or physician$)).mp. (19948)
20 (primary adj2 (care or health care or healthcare or medical care or patient care)).mp. (33272)
21 (professional* or staff or worker* or frontline or doctor* or practitioner* or physician*).mp. (416460)
22 20 and 21 (16693)
23 17 or 18 or 19 or 22 (39036)
24 8 and 16 and 23 (23)

Update search: 03/06/2021

1 occupational stress/ or emotional exhaustion/ or work-life balance/ or compassion fatigue/ (16539)
2 occupational health/ or work related illnesses/ (3959)
3 stress/ or distress/ or exp posttraumatic/ or stress disorder/ or psychological stress/ or well being/ or mental health/ or coping behavior/ or health/ or anxiety/ or insomnia/ (252353)
4 (burnout or burn out or workload or work load or job satisfaction or stress* or work life or worklife).mp. (250133)
5 (well being or wellbeing or distress or burnout or anxie* or anxious* or depress* or satisfaction or strain* or burden or absent* or turnover or retention or resilience).mp. (639735)
6 (exhaustion or work related or psychological or coping or psychiatric morbidit* or posttrauma* or trauma*).mp. (391209)
7 (fatigue or occupational health or mental health or pressure* or sleep or insomnia).mp. (295369)
8 or/1-7 (1093748)
9 exp coronavirus/ (2813)
10 coronavirus infections/ or severe acute respiratory syndrome/ (255)
11 ((corona* or corono*) adj1 (virus* or viral* or virinae*)).mp. (86)
12 (coronavirus* or coronovirus* or coronavirinae* or Coronavirus* or Coronovirus* or Wuhan* or Hubei* or Huanan or "2019-nCoV" or 2019nCoV or nCoV2019 or "nCoV-2019" or "COVID-19" or COVID19 or "CORVID-19" or CORVID19 or "WN-CoV" or
WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or "SARS-CoV-2" or "SARSCoV-2" or "SARSCoV2" or
"SARS-CoV2" or SARSCov19 or "SARS-Cov19" or "SARSCov-19" or "SARS-Cov-19" or Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*).mp. (6668)
13 (((respiratory* adj2 (symptom* or disease* or illness* or condition*)) or "seafood market*" or "food market*") adj10 (Wuhan* or Hubei* or China* or Chinese* or Huanan*)).mp. (21)
14 ((outbreak* or wildlife* or pandemic* or epidemic*) adj1 (China* or Chinese* or Huanan*)).mp. (113)
15 "severe acute respiratory syndrome*".mp. (476)
16 or/9-15 (7018)
17 general practitioners/ (4579)
18 family physicians/ or primary health care/ (17096)
19 ((family or general) adj2 (doctor? or medicine or medical practitioner? or medical practice? or practice? or practitioner? or physician$)).mp. (20641)
20 (primary adj2 (care or health care or healthcare or medical care or patient care)).mp. (34636)
21 (professional* or staff or worker* or frontline or doctor* or practitioner* or physician*).mp. (433478)
22 20 and 21 (17338)
23 17 or 18 or 19 or 22 (40404)
24 8 and 16 and 23 (52)
25 24 and 2021$.up. (25)
26 24 and 202012$.up. (3)
27 24 and 2020113$.up. (1)
28 24 and 2020112$.up. (0)
29 24 and 20201119$.up. (0)
30 25 or 26 or 27 or 28 or 29 (29)

Science Citation Index Expanded (SCI-EXPANDED) --1900-present

Original Search: 19/11/2020

---

#1 TS=(stress* OR Burnout OR "occupational health" OR "Work-Life" OR psychological OR fatigue OR anxiety OR distress OR "mental health" OR trauma OR adaptation OR "emotional adjustment" OR sleep OR "burn out" OR workload or "work load" OR "job satisfaction" OR worklife OR "well being" OR wellbeing OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention OR resilience OR exhaustion OR "work related" OR coping OR "psychiatric morbidit*" OR posttrauma* OR pressure* OR insomnia) 6,437,484

#2 TS=("COVID-19" or COVID19 or "COVID-2019*" or 2019nCoV or "2019-nCoV" or "Corona Virus" or Coronavirus* or coronovirus* or coronavirinae* or "CoV 2" or CoV2 or COVID or nCoV* or SARS2* or SARSCoV* or "SARS-CoV*) or Wuhan* or Hubei* or Huanan or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or " Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*) 58,765

#3 TS=("general practice" OR "primary care physicians" OR "family practice" OR "family physicians" OR "primary health care") 75,358

#4 TS=((family OR general) NEAR/2 (doctor* OR medicine OR "medical practitioner*" OR "medical practice*" OR practice* OR practitioner* OR physician*) ) 108,332

#5 TS=((primary) NEAR/2 (care OR "health care" OR healthcare OR "medical care" or "patient care") ) 138,411

#6 TS=(professional* OR staff OR worker* OR frontline OR doctor* OR practitioner* OR physician*) 869,919

#7 #6 AND #5 60,528

#8 #7 OR #4 OR #3 155,801

#9 #8 AND #2 AND #1 104

Update Search: 03/06/2021

---

#1 TS=(stress* OR Burnout OR "occupational health" OR "Work-Life" OR psychological OR fatigue OR anxiety OR distress OR "mental health" OR trauma OR adaptation OR "emotional adjustment" OR sleep OR "burn out" OR workload or "work load" OR "job satisfaction" OR worklife OR "well being" OR wellbeing OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention OR resilience OR exhaustion OR "work related" OR coping OR "psychiatric morbidit*" OR posttrauma* OR pressure* OR insomnia) 6,700,467

#2 TS=("COVID-19" or COVID19 or "COVID-2019*" or 2019nCoV or "2019-nCoV" or "Corona Virus" or Coronavirus* or coronovirus* or coronavirinae* or "CoV 2" or CoV2 or COVID or nCoV* or SARS2* or SARSCoV* or "SARS-CoV*) or Wuhan* or Hubei* or Huanan or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or " Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*) 114,895

#3 TS=("general practice" OR "primary care physicians" OR "family practice" OR "family physicians" OR "primary health care") 77,459

#4 TS=((family OR general) NEAR/2 (doctor* OR medicine OR "medical practitioner*" OR "medical practice*" OR practice* OR practitioner* OR physician*) ) 111,344

#5 TS=((primary) NEAR/2 (care OR "health care" OR healthcare OR "medical care" or "patient care") ) 144,534

#6 TS=(professional* OR staff OR worker* OR frontline OR doctor* OR practitioner* OR physician*) 912,470

#7 #6 AND #5 62,982

#8 #7 OR #4 OR #3 160,946

#9 #8 AND #2 AND #1 168

Limited to 2020 onwards 165

Social Sciences Citation Index (SSCI) --1956-present

Original Search: 19/11/2020

---

#1 TS=(stress* OR Burnout OR "occupational health" OR "Work-Life" OR psychological OR fatigue OR anxiety OR distress OR "mental health" OR trauma OR adaptation OR "emotional adjustment" OR sleep OR "burn out" OR workload or "work load" OR "job satisfaction" OR worklife OR "well being" OR wellbeing OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention OR resilience OR exhaustion OR "work related" OR coping OR "psychiatric morbidit*" OR posttrauma* OR pressure* OR insomnia) 1,349,988

#2 TS=("COVID-19" or COVID19 or “COVID-2019*” or 2019nCoV or “2019-nCoV” or "Corona Virus" or Coronavirus* or coronovirus* or coronavirinae* or "CoV 2" or CoV2 or COVID or nCoV* or SARS2* or SARSCoV* or "SARS-CoV*) or Wuhan* or Hubei* or Huanan or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or " Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*) 10,671

#3 TS=("general practice" OR "primary care physicians" OR "family practice" OR "family physicians" OR "primary health care") 32,874

#4 TS=((family OR general) NEAR/2 (doctor* OR medicine OR “medical practitioner*” OR “medical practice*” OR practice* OR practitioner* OR physician*) ) 41,941

#5 TS=((primary) NEAR/2 (care OR “health care” OR healthcare OR “medical care” or “patient care”) ) 78,294

#6 TS=(professional* OR staff OR worker* OR frontline OR doctor* OR practitioner* OR physician*) 568,939

#7 #6 AND #5 35,821

#8 #7 OR #4 OR #3 72,310

#9 #8 AND #2 AND #1 55

Update Search: 03/06/2021

---

#1 TS=(stress* OR Burnout OR "occupational health" OR "Work-Life" OR psychological OR fatigue OR anxiety OR distress OR "mental health" OR trauma OR adaptation OR "emotional adjustment" OR sleep OR "burn out" OR workload or "work load" OR "job satisfaction" OR worklife OR "well being" OR wellbeing OR anxie* OR anxious* OR depress* OR satisfaction OR strain OR burden OR absent* OR turnover OR retention OR resilience OR exhaustion OR "work related" OR coping OR "psychiatric morbidit*" OR posttrauma* OR pressure* OR insomnia) 1,422,226

#2 TS=("COVID-19" or COVID19 or “COVID-2019*” or 2019nCoV or “2019-nCoV” or "Corona Virus" or Coronavirus* or coronovirus* or coronavirinae* or "CoV 2" or CoV2 or COVID or nCoV* or SARS2* or SARSCoV* or "SARS-CoV*) or Wuhan* or Hubei* or Huanan or "CORVID-19" or CORVID19 or "WN-CoV" or WNCoV or "HCoV-19" or HCoV19 or CoV or "2019 novel*" or Ncov or "n-cov" or " Ncovor or Ncorona* or Ncorono* or NcovWuhan* or NcovHubei* or NcovChina* or NcovChinese*) 28,458

#3 TS=("general practice" OR "primary care physicians" OR "family practice" OR "family physicians" OR "primary health care") 34,083

#4 TS=((family OR general) NEAR/2 (doctor* OR medicine OR “medical practitioner*” OR “medical practice*” OR practice* OR practitioner* OR physician*) ) 43,448

#5 TS=((primary) NEAR/2 (care OR “health care” OR healthcare OR “medical care” or “patient care”) ) 81,777

#6 TS=(professional* OR staff OR worker* OR frontline OR doctor* OR practitioner* OR physician*) 598,672

#7 #6 AND #5 37,387

#8 #7 OR #4 OR #3 75,254

#9 #8 AND #2 AND #1 181

Limited to 2020 onwards 180

## Appendix B: Characteristics of Included Studies

| Author, year | Study title | Country | Sample size | Participants | Research method | Outcome measures |
|---|---|---|---|---|---|---|
| Amerio et al, 2020 | *Covid-19 pandemic impact on mental health: a web-based cross-sectional survey on a sample of Italian general practitioners* | Italy | 131 | Mean age 52.31 (SE +/- 12.24); 68 (51.9%) male; 92 (70.2%) married; 61 (46.6%) reported at least one general medical condition | Online cross-sectional survey from March 15, 2020 - April 15, 2020 | PPE, helplessness, COVID contacts, SF12, PHQ9, GAD7, ISI |
| Alrawashdeh et al, 2020 | *Occupational burnout and job satisfaction among physicians in times of COVID-19*<br><br>*crisis: a convergent parallel mixed-method study* | Jordan | Survey - 973<br><br>Interviews - 11 | GPs were 15.2% of sample. Total sample: Mean age 34.6 (±9.9, 24 - 77)<br><br>Total sample: Female: 30.2%, Male: 69.8% | Convergent parallel multi-strand mixed method design<br><br>Online cross sectional survey October 29th - November 12th, 2020<br><br>Semi-structured telephone interviews November 8th -20th, 2020 | Burnout Measure – short version (BMS). Five item short index of job satisfaction (SIJS).<br><br>Interviews based on conceptual framework developed from Herzberg's Two-Factor Theory of Motivation and Job Demands - Resources Model |
| Baptista et al, 2020 | *Physician Burnout in Primary Care during the COVID-19 Pandemic: A Cross-Sectional Study in Portugal* | Portugal | 214 | Mean age 38.6 (± 11.3, 24 – 67), Female: 80%, Male:18.7% Non-binary: 0.5%, Professional Experience: <5 years (33.2%), 6 -15, (39.7%), >15, (27.1%) | Online cross-sectional survey May 9th - June 8th , 2020 | Copenhagen Burnout Inventory (CBI). Resilience Scale. Depression, Anxiety, and Stress Scales (DASS-21) |
| Castelli et al, 2020 | *The psychological impact of COVID-19 on general practitioners in Piedmont, Italy* | Italy | 246 | Mean Age: 51.1 years, (SD + 13.1). Female: 56%, Male: 44% | Online cross-sectional survey April 28th - May 10th, 2020 | State-Trait Anxiety Inventory-Form Y1 (STAI Y1). Beck Depression Inventory (BDI-II). PTSD Checklist for DSM-5 (PCL- 5) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Di Monti et al, 2020 | *From Resilience to Burnout: Psychological Features of Italian General Practitioners During COVID-19 Emergency* | Italy | 102 | Also included GP trainees. Mean age 55.13 (SD 11.40); 62.7% female; 86.3% >10 years practice | Online cross-sectional questionnaire from March 10, 2020 - May 18, 2020 | MBI emotional exhaustion, MBI depersonalisation, MBI personal accomplishment, Coping Inventory for Stressful Situations (CISS), resilience, Intolerance of Uncertainty |
| Dutour et al, 2020 | *Family Medicine Practitioners' Stress During the COVID-19 Pandemic: A Cross-Sectional Survey* | France | 898 | Mean age 47.7 (SE +/-11.4); 61% women; mean years practice 14.9 (SE +/- 11.5), working alone 222 (25%), working in a practice with other GPs 526 (59%), working in a multidisciplinary nursing home 156 (17%) | Online cross-sectional survey from April 8 - May 10, 2020 | Perceived Stress Score (PSS-10) |
| Filfilan et al, 2020 | *Psychosocial Impact of COVID-19 on Family Physicians in the Kingdom of Saudi Arabia* | Kingdom<br><br>of Saudi Arabia | 475 | Mean Age: 57.7%, < 30 (26.1%), 30 - 39, (26.1%), 40 – 49 (11.8%), > 50 (4.4%) Female: 48.2%, Male 51.8% | Online cross-sectional survey<br><br>No dates for period of data collection | Questionnaire recorded socio-demographic details, health concerns and emotional distress, perceptions related to precautionary measures for COVID 19 and other effects of COVID |
| Gold et al, 2020 | *Video Visits: Family Physician Experiences With Uptake During the COVID-19 Pandemic* | USA | 102 | Faculty and resident doctors at a Department of family medicine who had conducted a video visit in the prior month<br><br>No data on gender or age of participants | Online cross-sectional survey April 23rd -May 11th, 2020 | Developed a tool to measure experiences of telemedicine including following domains: prior experience with video visits, satisfaction, barriers, and impact on stress, time, and documentation. |
| Gokdemir et al, 2020 | *Family Physicians' Knowledge about and Attitudes towards COVID-19 - A Cross-sectional Multicentric Study* | Various countries: Turkey (23%), Greece (17%), US (17%), | 250 | Mean age 40.58 (range 24-68, SD 8.88); years practice 1-43 (mean=12.35, SD 8.96) | Online cross-sectional survey from March - April 2020 | Ten-Item Personality Inventory (TIPI); Satisfaction with Life Scale (SWLS); Ten-Item Perceived Stress Scale (PSS); Templar Death Anxiety Scale (DAS) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | Portugal (4%), Spain (2%), Italy (2%), Canada (2%), Other (24%) | | | | |
| Gomez et al, 2020 | *A Qualitative Study of Primary Care Physicians' Experiences With Telemedicine During COVID-19* | U.S.A | 15 | GP: 73%, Residents: 27%. Age: <35 (33%), 35- 49 (27%), > 50 (40%) Female: 53%, Male: 47% | Semi structured interviews by video conference April 19th - June 28th, 2020 | Explored views about benefits and challenges of telemedicine |
| Hilbert | *Effects of the corona pandemic on the everyday work of young family doctors* | Germany | 414 | Members of Young General Medicine Group: GP trainees: 56%, Early Career GP's: 44%. Age: 20 -29 (3%), 30 - 39 (63%), 40-49 (28%), >50 (6%). Female: 79%, Male: 21% | Online cross-sectional survey<br><br>April 26th - May 31st, 2020 | Assessed mood of young GPs |
| Jahan et al, 2020 | *Mental health status among Health Care Workers in Primary care*<br><br>*exposed to COVID-19 pandemic in North Batinah, Oman* | Oman | 327 | Doctors and nurses in primary healthcare: GP's: 26.5% of sample. Demographics for the GP group are not separately reported. | Online cross-sectional survey<br><br>No dates given for period of data collection | Depression Anxiety Stress Scale (DASS) 21 |
| Lange et al, 2020 | *Impact on mental health of the COVID-19 outbreak among general*<br><br>*practitioners during the sanitary lockdown period* | France | 332 | Mean age: 50.74 (± 11.9), Female: 43.5%, Male: 46.5%. GP's working in high epidemic locations: 27.7% | Cross-sectional survey<br><br>One month after sanitary lockdown (17th March, 2020) | Four psychological validated self-report questionnaires using; Perceived Stress Scale, Impact of Event Scale-revised PTSD, Maslach Burnout Inventory (MBI), General Self-Efficacy scale |

| | | | | | | |
|---|---|---|---|---|---|---|
| Lau et al, 2020 | *The impact of COVID -19 on private and public primary care physicians: A cross-sectional study* | Singapore | 172 | Age: >30 (9.8%), 30 - 39 (27.3%), 40 – 49, (38.5%) >50 (24.4%). All male respondents | Online cross-sectional survey (March 6th – 29th) | Perceived impact of COVID on personal life and work |
| Lau et al, 2020 | *Prepared and highly committed despite the risk of COVID-19 infection: A cross-sectional survey of primary care physicians' concerns and coping strategies in Singapore* | Singapore | 158 | Age was not reported. 53% male. | Cross-sectional online questionnaire (March 6 - 29, 2020) | Work-related concerns, impact on personal life, outbreak preparedness, factors to reduce stress |
| Lee, et al 2020 | *Perceived stress and associated factors among healthcare workers in a primary healthcare setting: the Psychological Readiness and Occupational Training Enhancement during COVID-19 Time (PROTECT) study* | Singapore | 1040 | Primary healthcare workers in public sector National Healthcare Group Polyclinics. Primary care doctors 17.4% of sample. Demographics for the GP group are not separately reported. | Online cross-sectional survey (March 13th - 24th, 2020) | Perceived Stress Scale (PSS) |
| Moussa et al, 2020 | *Does it Rain after the Storm? Family medicine resident's reflection at Qatar: Results From a cross sectional study* | Qatar | 49 | Family medicine residents. Female: 61.2%, Male: 38.8% | Cross-sectional survey | Impact on quality of life parameters in areas of social, skill, behaviour, educational and professional |
| Ortega-Galán et al, 2020 | *Professional Quality of Life and Perceived Stress in Health Professionals before COVID-19 in Spain: Primary and Hospital Care* | Spain | 537 | Primary and hospital care professionals including doctors, nurses and health technicians. Primary care workers were 45.3% of sample, of which doctors made up 26.7%. Mean age of primary care workers: 49.70 (±9.74), | Online cross-sectional survey (March 30 – April 16th, 2020) | Perceived Stress Scale (PSS-14), burnout, Professional quality of life Scale (ProQol) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Female: 73.3%, Male: 26.7% of primary care workers | | |
| Montessero – Castro, et al 2020 | *Probable generalized anxiety disorders in the covid 19 pandemic: assessment in general practitioners in the Colombian Caribbean* | Colombia | 294 | Female: 59.6%, Male: 44.4%. Worked in Departmental Capitals: 83% | Online cross-sectional survey | Generalised Anxiety Disorder scale GAD 7 |
| Monterrosa-Castro et al, 2020 | *Psychosocial factors associated with symptoms of generalized anxiety disorder in general practitioners during the COVID-19 pandemic* | Colombia | 531 | Limited reporting of age: 47.9% were over 30 years of age; 59.5% female | Cross-sectional online questionnaire (April 2020) | 7-Item Generalized Anxiety Disorder Scale (GAD-7), the Work-related Stress Test, and Fear of COVID-19 Scale (FCV-19S) |
| Rossi et al, 2020 | *Mental health outcomes among front- and second-line health workers associated with the COVID-19 pandemic in Italy* | Italy | 86 | GPs were 86/1386 (6.24%) respondents. Demographics for the GP group are not separately reported. | Cross-sectional online questionnaire (March 27-31, 2020) | Numerous, though only PTSS was reported by GP subgroup. |
| Sitanggang et al, 2020 | *Determinants of Mental Health and Practice Behaviours of General Practitioners During COVID-19 Pandemic in Bali, Indonesia: A Cross-sectional Study* | Indonesia | 635 | Primary care doctors (12.3%) of sample. Mean age: 32.2(±7.7), Female: 55.5%, Male 45.5%, Mean work experience as a GP: 7.2 years (±6.9) | Online cross-sectional survey (July 1 -14$^{th}$, 2020) | Standard Depression, Anxiety and Stress Scale DASS -21 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Sotomayor-Castillo et al, 2020 | *General practitioners' knowledge, preparedness, and experiences of managing COVID-19 in Australia* | Australia | 244 | Members of Royal Australian College of General Practitioners (RACGP), including retired GP's, those not in practice, GP trainees and overseas registered doctors<br><br>Professional experience Mean: 21.04 years. No information on age or gender of participants | Online cross -sectional survey (June – September, 2020) | Capability, Opportunity, Motivation, Behaviour (COM –B) model |
| Stafie et al, 2020 | *The Professional and Psycho-Emotional Impact of the COVID-19 Pandemic on Medical Care—A Romanian GPs' Perspective* | Romania | 677 | GP's in private or public family practice. Mean age: 51.3 (25 – 65). No information on gender of participants. | Online cross -sectional survey (April 30th to May 2nd 2020) | Measured burden of prevention; presence of stress symptoms and adjustment to pandemic |
| Tas et al, 2020 | *Evaluation of Job Strain of Family Physicians in COVID-19 Pandemic Period- An Example from Turkey* | Turkey | 448 | Mean age 39.10 (SE +/- 9.59, range 24-65). Gender not reported. | Cross-sectional online questionnaire (May 1 - June 1, 2020) | Evaluation of knowledge on COVID-19 and personal protection, and the Job Strain Scale Short Form |
| Taylor et al, 2020 | *'Reluctant pioneer': A qualitative study of doctors' experiences as patients with long COVID* | U.K | 13 | Doctors who self-reported experiences of long COVID. GPs: 61% (8). Characteristics not reported for GP group | Semi-structured interviews by telephone or video conferencing (July and August, 2020) | Qualitative themes around: 'making sense of symptoms,' 'feeling let down,' 'using medical knowledge and connections,' 'wanting to help and be helped,' 'combining patient and professional identity' |
| Trivedi et al, 2020 | *Recovery, Restoration and Risk: A Cross Sectional Survey of the Impact of COVID-19 on General Practitioners in the First UK City to Lockdown* | UK | 111 | Leicestershire GPs. Age: 25-34: 14%, 35-54:60%,55-64:23%,65-74:3% over 75: 1%; 51.4% (57) male; majority Black, Asian, ethnic minority (78, 70.3%) followed by British (26, 23.4%), majority GP partner (63, 56.8%), followed by salaried GP (23, 20.7%), locum GP | Cross-sectional retrospective questionnaire sent July 24 - August 7, 2020 | Perceived Stress Scale (PSS) |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | (17, 15.3%), GP trainee (6, 5.4%), majority over 10 years GP practice (73, 65.8%), followed by 2-5 years (15, 13.5%), 6-10 years (11, 9.9%), <2 (6, 5.4%) still training (6, 5.4%), in a registered teaching practice (81, 73.0%). | | |
| Tse et al, 2020 | *Fighting against COVID-19: preparedness and implications on clinical practice in primary care in Shenzhen, China* | China | 361 | Working in private clinics: (85%), hospitals: (15%), Age: mean 39.27 (± 7.77), Female: 54.8% Male: 45.2% | Cross-sectional survey (February, 2020) | Measured changes in clinical behaviour and anxiety levels |
| Toselli et al, 2020 | *Teachings After COVID-19 Outbreak From a Survey of Family Physicians* | Italy | 300 | Mean age: 53.6 (±13.5), Female: 44.1% Male: 55.9%. Work setting: Solo practice, (47.7%) group practice (42%), multi-speciality group (6.3%) | Online cross-sectional survey (April 16th - 30th, 2020) | Perceived personal safety, concerns regarding work changes and risk, satisfaction with hospital networking |
| Verhoeven et al, 2020 | *Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in Flemish GPs* | Belgium | 132 | Mean age 41 (SD 12.53, range 24-67). 39% Male | Semi-structured interviews conducted between March 24-31 2020 | Qualitative themes around management, person-centred care, problem-solving skills, comprehensive care, community orientation, holistic view, self-protection and self-care |
| Vilovic et al, 2020 | *Family Physicians' Standpoint and Mental Health Assessment in the Light of COVID-19 Pandemic - A Nationwide Survey Study* | Croatia | 613 | Family doctors with at least two years' experience. Mean age: 44 (35 - 55) Female:80%, Male 20%<br><br>Work experience: 13 years (7 -26) | Online cross-sectional survey November 30th 2020 - January 15th, 2021 | Perceived stress scale (PSS). Hospital anxiety, depression and scale (HADS). Impact on event scale with modifications for COVID (IES-COVID19) |

| | | | | | | |
|---|---|---|---|---|---|---|
| Wanat et al, 2020 | *Transformation of primary care during the COVID-19 pandemic: experiences of healthcare professionals in eight European countries* | 8 European countries: England, Belgium, Netherlands, Ireland, Germany, Poland, Greece, Sweden | 80 | Primary Care Practitioners (GP's and nurses); 11 from England, of which 7 were GPs.<br><br>No breakdown for age and gender of GP's within sample | Exploratory qualitative study using semi-structured interviews (April to July, 2020) | Explored PCP's experiences of changes, sense of personal risk, navigating new relationships with patients and views on COVID testing |
| Xu et al, 2020 | *Primary Care Practitioners' Barriers to and Experience of COVID-19 Epidemic Control in China: a Qualitative Study* | China | 21 | Primary care practitioners (PCPs) affiliated with either community health centres or township health centres in four provinces of China were recruited. Mean age 36 (range 29-46), 52% male. | Semi-structured, in-depth interviews (February 12 - March 10, 2020) | Qualitative themes around: barriers to outbreak control, impact of epidemic control on GPs and potential solutions. |
| Yin et al, 2020 | *General practitioner trainees' career perspectives after COVID-19: a qualitative study in China* | China | 12 | GP trainees. Age: <29 (15.9%), 30-39, (44.9%), 40 – 49 (29.3%), > 50 (9.7%). Female: 75%, Male 25% | Semi structured telephone interviews (March - April, 2020) | Outcomes in career perspectives after the outbreak of COVID 19 |
| Zeng et al, 2020 | *Psychological Distress Reported by Primary Care Physicians in China During the COVID-19 Pandemic* | China | 712 | Age: < 30 (15.9%), 30 -39, (44.9%), 40 - 49 (29.3%), >50 (9.7%). Female: 55.6%, Male: 44.4%. Urban based: 47%, Rural based: 52.9% | Online cross-sectional survey (February 10th - 13th 2020). Follow up survey (July 10th - 13th 2020) | GHQ-12 measured psychological distress. Also assessed preparedness, work impact, personal life impact, concerns and support |

## Appendix C: Supplementary Tables to Work package 2

### Supplementary Table 1: Top ten hashtags in 2019, 2020 and 2021

| Top hashtags according to the number of mentions among the 185 GPs in 2019, 2020, and 2021 | | | | | |
|---|---|---|---|---|---|
| Top 2019 Hashtags | No. of mentions 2019 | Top 2020 Hashtags | No. of mentions 2020 | Top 2021 Hashtags (Jan to 12th Feb only) | No.of mentions 2021 |
| #nhs | 470 | #covid19 | 1014 | #covid19 | 122 |
| #rcgpac | 201 | #nhs | 717 | #nhs | 76 |
| #teamgp | 183 | #coronavirus | 296 | #covidvaccine | 74 |
| #babylosshour | 165 | #teamgp | 192 | #teamgp | 59 |
| #gp | 144 | #covid_19 | 170 | #geribookclub | 41 |
| #brexit | 129 | #covid | 146 | #covidvaccination | 34 |
| #menshealth | 126 | #primarycare | 125 | #covid | 30 |
| #primarycarenetworks | 112 | #covid19uk | 124 | #oneteam | 24 |
| #sepsis | 89 | #gp | 122 | #medTwitter | 18 |
| #primarycare | 88 | #generalpractice | 98 | #primarycare | 16 |
| Top hashtags according to the number of GPs using them in 2019, 2020, and 2021 | | | | | |
| Hashtags | GPs mentioning hashtag in 2019 (n=185) | Hashtags | GPs mentioning hashtag in 2020 (n=185) | Hashtags | GPs mentioning hashtag in 2020 (n=185) |
| #nhs | 68 (37%) | #covid19 | 103 (56%) | #covid19 | 33 (18%) |
| #brexit | 32 (17%) | #nhs | 73 (39%) | #nhs | 29 (16%) |
| #teamgp | 31 (17%) | #covid_19 | 45 (24%) | #covidvaccine | 26 (14%) |
| #gp | 29 (16%) | #coronavirus | 41 (22%) | #teamgp | 19 (10%) |
| #rcgpac | 23 (12%) | #covid | 38 (21%) | #covidvaccination | 17 (9%) |
| #primarycare | 23 (12%) | #covid19uk | 37 (20%) | #covid | 12 (6%) |
| #generalpractice | 22 (12%) | #teamgp | 34 (18%) | #primarycare | 12 (6%) |
| #mentalhealth | 21 (11%) | #gp | 33 (18%) | #vaccine | 10 (5%) |
| #socialprescribing | 19 (10%) | #nhsheroes | 28 (15%) | #lockdown | 8 (4%) |
| #health | 18 (10%) | #socialdistancing | 27 (15%) | #covid19uk | 8 (4%) |

*Key*

Red =current affairs, Blue – health or health service, Orange = COVID-19, Green =primary care, Grey =miscellaneous

### Supplementary Table 2: Top ten handles in 2019, 2020 and 2021

| Top handles according to the number of mentions among the 185 GPs in 2019, 2020, and 2021 | | | | | |
|---|---|---|---|---|---|
| Handle | Times used 2019 | Handle | Times used 2020 | Handle | Times used 2021 |
| @rcgp | 1042 | @rcgp | 778 | @nikkikf | 160 |
| @lowcarbgp | 514 | @nikkikf | 634 | @nhsengland | 78 |
| @nikkikf | 492 | @drsdeg | 578 | @rcgp | 57 |
| @nhsengland | 423 | @nhsengland | 535 | @parthaskar | 53 |
| @helenrcgp | 419 | @matthancock | 407 | @drsimonhodes | 49 |
| @drsdeg | 406 | @fhussain73 | 390 | @trisha_the_doc | 49 |

| | | | | | |
|---|---|---|---|---|---|
| @matthancock | 385 | @thebma | 350 | @yvettedoc50 | 49 |
| @sonalikinra | 339 | @trishgreenhalgh | 345 | @rbkingston | 43 |
| @thebma | 290 | @lowcarbgp | 326 | @drjamesgill | 40 |
| @fhussain73 | 284 | @movemoresheff | 311 | @nhskingston_ | 39 |
| Top hashtags according to the number of GPs using them in 2019, 2020, and 2021 | | | | | |
| Handle | No of GPs 2019 (n=185) | Handles | No of GPs 2020 (n=185) | Handle | No of GPs 2021 (n=185) |
| @rcgp | 100 (54%) | @rcgp | 83 (45%) | @nikkikf | 42 (23%) |
| @matthancock | 73 (39%) | @nhsengland | 76 (41%) | @nhsengland | 33 (18%) |
| @nhsengland | 68 (37%) | @matthancock | 76 (41%) | @rcgp | 30 (16%) |
| @helenrcgp | 58 (31%) | @nikkikf | 75 (41%) | @drsdeg | 19 (10%) |
| @nikkikf | 50 (27%) | @drsdeg | 64 (35%) | @drmarkporter | 18 (10%) |
| @thebma | 49 (26%) | @trishgreenhalgh | 64 (64%) | @primarycarenhs | 17 (9%) |
| @drsdeg | 46 (25%) | @borisjohnson | 55 (30%) | @matthancock | 17 (9%) |
| @bmj_latest | 37 (20%) | @thebma | 53 (29%) | @fhussain73 | 16 (9%) |
| @borisjohnson | 36 (19%) | @phe_uk | 45 (24%) | @helenrsalisbury | 16 (9%) |
| @drgandalf52 | 35 (19%) | @martinrcgp | 43 (23%) | @thebma | 16 (9%) |

*Key*

Red =politicians, Blue – organisation, Green = GPs or heads of organisations, Grey =miscellaneous

## Supplementary Table 3: Top ten words used in 2019, 2020 and 2021 (excluding stop words)

| Top words according to the number of mentions among the 185 GPs in 2019, 2020, and 2021 | | | | | |
|---|---|---|---|---|---|
| Top words used in 2019 (n=185) | Times used | Top words used in 2020 (n=185) | Times used | Top words used in 2021 (n=185) | Times used |
| Thank | 2739 | Thank | 3585 | Thank | 507 |
| Great | 2385 | Time | 2405 | Vaccine | 366 |
| GP | 1998 | Great | 2213 | patient | 332 |
| Patient | 1935 | Patient | 2191 | Time | 293 |
| Time | 1924 | People | 2190 | People | 290 |
| Good | 1747 | Good | 2128 | Great | 258 |
| Work | 1735 | Work | 2107 | Covid | 252 |
| People | 1460 | GP | 2013 | GP | 249 |
| care | 1368 | Care | 1791 | Good | 248 |
| Health | 1226 | Health | 1394 | Work | 247 |
| Top words according to the number of GPs using them in 2019, 2020, and 2021 | | | | | |
| Top words used in 2019 (n=185) | No of GPs 2019 (n=185) | Top words used in 2020 (n=185) | No of GPs 2020 (n=185) | Top words used in 2021 (n=185) | No of GPs 2021 (n=185) |
| Thank | 153 | Thank | 154 | Thank | 154 |
| Great | 152 | Time | 147 | Time | 147 |
| Work | 146 | Great | 146 | Great | 146 |
| Time | 142 | Work | 146 | Work | 146 |
| Good | 141 | People | 145 | People | 145 |
| Health | 140 | Good | 141 | Good | 141 |
| Patient | 136 | Patient | 139 | Patient | 139 |
| People | 135 | Please | 137 | Please | 137 |
| Care | 131 | GP | 137 | GP | 137 |
| GP | 131 | Health | 135 | Health | 135 |

*Key*

Blue – health or health service, Orange = COVID-19, Green =primary care, Grey =miscellaneous

## Supplementary Table 4: Trends in terms used for selected topics 2019 to February 2021

| Topic | Terms Searched | Highest Percentage of Daily Tweets | Notes |
|---|---|---|---|
| **Vaccination** | Vaccination OR vaccinations OR vaccine OR vaccines OR vaccinated OR vaccinating OR #covidvaccine OR #vaccines OR #covidvaccination OR#vaccineswork OR #covid-19 OR#covid2019 OR #vaccine OR #vaccination OR #covidvaccines OR #covid19vaccine OR #vaccinessavelives OR #pfizervaccine OR #pfizer OR #astrazeneca OR #covidvacccine #vaccinate OR #getvaccinated | 23.4% | Prevalent from the 9th November 2020 onwards, with high volume from beginning of December. 9th November 2020 Pfizer announced results of their phase 3 clinical trial efficacy test results. Vaccination roll out began on 8th December 2020. |
| COVID-19 | corona OR coronavirus OR covid OR covid19 OR pandemic OR virus#covid19 OR #coronavirus OR #covid2019 OR #covid_19 OR #covid OR #covid_19 OR #covid19uk OR #coronavirusuk OR #covid-19 OR #fightcovid19 OR#pandemic OR #covid__19 OR #corona OR #covid_19uk OR #coronavirusoutbreak OR #coronavirusupdate OR#covid2019uk OR #covid19pandemic OR #longcovid OR #covidassessmentcentre OR #coronacrisis OR #coronaviruspandemic OR #coviduk OR #coronacrisisuk OR #zerocovid OR #coronauk OR #coronavirusupdates OR#coronaoutbreak OR #coronaupdate OR #coronvirusuk OR #covidiots | 18.1% | Prevalent from Feb and March 2020 onwards. COVID became notifiable disease in UK on 5th March 2020. |
| Interventions to reduce COVID-19 transmission | distancing OR isolate OR isolated OR isolating OR isolation OR lockdown OR mask OR socially OR transmission OR transmitted OR transmit OR vulnerable OR wave OR shielding OR #uklockdown OR #stayathomeandstaysafe OR #stayhomesavelives OR #lockdown OR #lockdown2 OR #lockdownuk OR #lockdownnow OR #socialdistancing OR #socialdistancinguk OR #stayhome OR #stayathome OR #staysafe OR #wearamask OR #flattenthecurve OR #stayinworkout OR #covidiots OR #washyourhands OR #wearamask OR #physicaldistancing OR #savelives OR #stayathomesavelives OR #stayhomestaysafe OR #mask OR #facemask OR #shielding OR #mymaskprotectsyou OR #staysafestayhome OR #selfisolation OR #flattenthecuve OR | 21.8% | Prevalent from March 2020 onwards. Peaks on topics of lockdowns, Dominic Cummings, and mask campaigning 23 March 2020, the UK went into lockdown. 22 May News breaks of Mr Cummings trip to Durham, 24 July Compulsory face coverings in indoor public spaces, 31 October 2020 announcement of second lockdown |

| | | | |
|---|---|---|---|
| | #stayathomeprotectthenhssavelives OR #protectthenhs OR #facemasks OR #saveournhs OR #coronaviruslockdownuk OR #selfisolating OR #socialdistancinguk OR #covidiot OR #mask OR #selfisolate OR #trackandtrace OR #coronaviruslockdown OR #socialdistanacing OR #shielding OR #coronalockdown OR #coronaviruslockdown OR #coronalockdown OR #social_distancing OR #socialdistance OR #stayalert OR #keepyourdistance OR #isolation | | |
| **Remote Working** | Telephone OR phone OR video OR OR virtual OR remote OR remotely OR teleconsultation OR accurx OR footfall OR econsult OR skype OR zoom OR #remoteworking OR #accurx OR #remoteconsultations OR #doctorlink OR #onlineconsultations #econsultations OR #teleconsultations OR #virtualgroupconsultations OR #newmodelsofconsultation OR #newconsultationmodels OR #videoconsultation OR #virtualconsulting OR #virtualmedicalmeetings OR #virtualmeetings OR #zoom OR #saturdayzooming OR #zoomlife OR #workingfromhome | 14.2% | Prevalent throughout 2019 to 2021. More consistently discussed from February 2020 onwards. Slight upward peak in March 2020 and larger peak 30 July 2020.<br>NHS Long Term Plan committed practices to offer e-consultations from April 2020.<br>30 July 2020 Matt Hancock state GPs 'should do all consultations remotely going forward'. |
| **Testing** | test OR tested OR testing OR #covidtesting OR #testhealthcareworkersnow OR #testnhsstaff OR #testtesttest OR #testingforcovid19 OR #testthenhs OR #coronavirustesting OR #testing | 12.9% | Prevalent from March 2020 onwards<br>Peak in first wave and September 2020<br>Testing was not widely available during the first wave even for HCPs.<br>Shortages in testing was reported in September with people unable to get a test or travelling for miles to get one. |
| Safety | at-risk OR danger OR dangerous OR dangerously OR safe OR safely OR safer OR safety OR scary OR scare OR scaremongering OR risk OR risking OR risky OR unsafe | 11.1% | Prevalent from March 2020 onwards<br>Peak in March –April 2020<br>First COVID death initially reported on 5 March 2020 (later earlier death on 30 January 2020 identified as first death).<br>25 March 2020 - first GP death. PPE shortages were widely reported during the first wave. |
| **Coping** | burnout OR cope OR coping OR difficult OR distress OR distressed OR distressing OR resilience OR stress OR stressed OR stressful OR struggle OR struggled OR struggling OR tough OR #burnout OR #resilience OR #physicianburnout OR #tackleburnout OR #coping OR #nhsresilience OR #betterworkloadnotmoreresilience OR #lessworknotmoreresilience OR #stress | 9.6% | Fluctuates throughout 2019 to 2021. Peaks reflect increase in posts on work related stress. |

| | | | |
|---|---|---|---|
| | OR #workstress OR #doctorsindistress OR #stressed | | |
| PPE | ppe OR protect OR protected OR protecting OR protective OR apron OR aprons OR glove OR gloves OR gown OR gowns OR doff OR doffing OR don OR visor OR visors OR goggles OR n95 OR ffp2 OR ffp3 OR #PPE OR #ppefornhs OR #ppeshortage OR #ppenow OR #properppe OR #weneedppe OR #ffp3 | 9.6% | Prevalent from March 2020 onwards. Peak on the 22nd April 2019. PPE shortages were widely reported during the first wave. |
| **Staff** | frontline OR staff OR frontliner OR #nhsheroes OR #frontlineheroes OR #frontliners OR #nhscovidheroes | 9.1% | Peaked in March to April 2020 with discussion of PPE and testing of staff and December 2020 to January 2021 with vaccinating staff. |
| **Mortality** | death OR die OR died OR mortality OR #death OR #mortality | 8.0% | Peak in first wave<br>First COVID death initially reported on 5 March 2020 (later earlier death on 30 January 2020 identified as first death).<br>25 March 2020 - first GP death. |
| **Sadness** | sad OR sadly OR sadness OR #sadly | 6.3% | Fluctuates throughout 2019 to 2021 |
| **Enjoyment** | enjoy OR enjoyable OR enjoyed OR enjoying OR enjoyment OR joy OR #joy | 6.3% | Dipped after the end of January 2020. Often referred to enjoying work, a course or learning. Before start of the pandemic more about enjoying an event such as cinema, xmas and after pandemic began walks, runs, cycling or countryside |
| **Appreciation** | appreciate OR appreciated OR grateful OR #clapforourcarers OR #gratitude OR #clapforcarers OR #clapforthenhs OR #grateful | 6.3% | Fluctuates throughout 2019 to 2021 |
| **Wellbeing** | wellbeing OR well-being OR #wellbeing OR #mindfulness OR #wellness OR #nhswellbeing OR #wellbeingatwork OR #healthandwellbeing OR #worklifebalance OR #mindfullness OR #wellbeingmatters OR #worklife OR #healthandwellness OR #doctorwellbeing OR #nhsmentalwellbeing OR #waystowellbeing OR #bmawellbeing OR #staffwellbeing OR #juniordoctorwellbeing OR #workplacewellbeing OR #clinicianwellbeing OR #worklifebalance | 5.6% | More peaks before COVID-19 in March 2020. Often refers to support available, particularly for GPS after start of pandemic and for patients and staff before. |
| **Party** | Party | 4.6% | More prevalent more throughout 2019 than 2021. Mostly political parties mentioned.<br>UK general election 12 December 2019. |
| **Overworked** | overstretched OR over-stretched OR overwhelmed OR overwhelming OR overworked OR relentless OR relentlessly OR stretched OR unrelenting OR work-life OR workload OR work-load OR #gpworkload OR #workload OR #workloadpressures | 4.6% | Peaks on 23 January 2019 discussion on GP pharmacist role in reducing GP workload.<br>5th September 2020 discussion on workload and F2F.<br>18th October 2020 discussion on abuse of primary care |

| | | | |
|---|---|---|---|
| | | | 7th January 2021 talk of workload prioritisation and vaccines 18th |
| **Closed** | closing OR closed OR close OR #gpsareopen OR #gpisopen #weareopen OR #generalpracticeisopen | 4.3% | More frequently used in September 2020.<br>Early September 2020 NHS England wrote to all GP practices to 'reopen' |
| **Flu** | Flu OR #flu OR #flujab OR #fluvaccine OR #influenza OR #fluclinic OR #flujabs OR #flu2020 OR #getyourflujab OR #flu2019 | 4.2% | More prevalent from September to November 2020 and in January 2019.<br>1 September 2020 start of largest UK flu vaccination programme |
| **F2F** | F2F | 3.2% | More frequently used after March 2020.<br>NHS Long Term Plan committed practices to offer e-consultations from April 2020 |
| **Morale** | demoralised OR demoralising OR demoralise OR morale OR #morale | 2.5% | More frequently used in September 2020.<br>September 2020: Media coverage suggesting GP surgeries have been closed |
| **Incompetence** | incompetence OR incompetent OR #incompetent | 2.2% | Prevalent more from April 2020 onwards. Discussions around government handling of pandemic<br>Media reports suggested government 'incompetence' increased threat of COVID-19 |
| **Bashing** | bashing OR bashed OR bash OR abuse OR abused | 1.3% | More frequently used in September 2020. GP abuse or bashing common thread in September 2020.<br>September 2020: Media coverage suggesting GP surgeries have been closed |

## Supplementary Table 5: Main Category, explanation and examples

| Category | Explanation | Paraphrased Examples* |
|---|---|---|
| Changes to GP practice | Includes changes in practice due to COVID such as with video and phone consultations (poor internet, poor reception, communication difficulties), working from home, and adaptions with COVID related work.<br>Does not include increased workload. | ***Challenges to practice (negative)***<br>*55% of communication is non-verbal (body language). So just think what GPs might be missing with the transition to using online consultations and texts to communicate with patients?*<br>*Not everyone wants a remote consultation. It's limited by Internet connections and exposes the digital divide and people do not seem to be ready to pick the phone up at 8:30am!*<br>*From personal experience, remote consultations are more exhausting than F2F ones. Putting us at a higher risk of burnout.*<br>*Never more challenging time to help patients in these times of distancing. Really missing face to face interactions and human connections that were integral before all this.*<br>*Good Morning? My GP clinic should have started 30 minutes ago but I'm still rebooting, because nothing will load Clinics can run late for a variety of reasons. Some patients need the extra time to be helped. Emergencies come in. But running late because of IT is not good!*<br>*Given a decade of cuts and still we deliver. Serco get 12 billion and we get £12.58 per vaccine. Where will we put patients to wait 15 mins after their jab, adequately socially distanced? How will we also do our day jobs?* |

| | | |
|---|---|---|
| | | ***Changes to practice (positive or neutral)***<br>*I was worried about how I'd navigate the changes in GPland during COVID however I am pleasantly surprised at how much better the systems are now! All patients seen today through ways that worked for them - face to face, telephone, video consultations! Happy patients = happy GP*<br>*Amazing achievement on how quickly and how brilliantly primary care adapted to remote triage and working. Things we'd been trying to achieve forever happened almost overnight.*<br>*I've found remote consults really helpful and often more efficient. Hope we can take the best of these changes into the future!* |
| NHS resources | Refers to funding of the NHS and general practice in terms of resources (such as funding, staff, PPE, and C19 testing). Does not to include resources unrelated to GPs such as ventilators (unless has an impact on GPs or GP work). | ***Lack of PPE***<br>*If we are going to get through #covid19 we need the appropriate PPE and testing. Urgent action required now!*<br>*Still no proper PPE in general practice. I'm so livid. I'm putting myself and family at risk because of this shambles government. Sort it out and sort it out fast.*<br>*I understand why hospital staff are getting PPE but why not GPs who are in the frontline dealing with many more people.*<br>***Lack of COVID-19 Testing***<br>*We need testing urgently. Almost half of our GPs are now off in our practice because of household isolation. If primary healthcare collapses there will be even more pressure on hospitals.*<br>*Test GPs for #COVID19 so that we can get on with our jobs without putting the public at risk*<br>*Prince Charles, politicians, premiership footballers and the super-rich are all getting tested for coronavirus yet GPs like me who are on the front line are being told no.*<br>*Don't forget GPs! As a GP I'm not yet categorised as a 'priority' for getting testing, despite the fact GPs provide patient-facing out of hours and urgent care throughout pandemic. So with no test I'm at home, my shifts cancelled and patients suffering. This is not right*<br>*It took me 10 days (supposed to be 2!) to get my results - in the meantime I can't see my patients face to face. This is not by choice, but compulsion owing to a failing system.*<br>***Lack of Staff***<br>*All this with a 1000 fewer GPs and 400,000 more patients than last year! More work, with fewer GPs, under the most challenging circumstances ever faced by the #NHS - that sums up #GeneralPractice right now.*<br>*We are losing GPs at an ever alarming rate. Our workforce is overstretched and underfunded with extremely low morale and facing constant attacks from the media and public.*<br>*Seeing the 'save the NHS' narrative replaced with the customary GP bashing at a time when we have fewer GPs than in 2005 is only going to push more of us away.*<br>***Lack of Funding or Pay***<br>*Government was right to give support to businesses for staying closed, but why is that not being as readily given to GP practices for staying open? We spent ££££s of our OWN money on PPE, and on locum GPs so we could provid a full service throughout the pandemic.*<br>*The totally shocking thing is that the failed #SercoTestAndTrace system costs MORE than ALL the GPs in the whole country for a whole year. Just think about what primary care could do with that money.*<br>*Some doctors who die during this pandemic will not receive full NHS death benefits. At a time when doctors are putting themselves in harms way the govt must act.*<br>*I hope that I'm wrong but it seems that nurses, healthcare assistants and foundation doctors will not benefit from a pay rise... Why ever not?!* |

| | | |
|---|---|---|
| | | ***Lack of resources (general)***<br>*We're working hard to do our best for patients with very limited resources. I don't know any doctors who voted for this threadbare and starved NHS.*<br>*GPs need support to do their job and for patients. Otherwise hospitals will be overwhelmed and prioritising sick patients will be become even harder.*<br>*I do try not to let myself get angry as I know it won't help me. But I am so so angry about the decade of cuts and how GPs will be left to make do and mend.*<br>***Adequate Resources***<br>*Good news! GP surgeries will be provided with PPE from this week free of charge. Whilst it feels odd as a GP dressed in full PPE I am feeling safer and better protected.*<br>*So lucky to have received donations of masks, visors and gloves. Lately, PPE supplies from the CCG have also been adequate.* |
| Direction/ Management/ Leadership from UK government or leading organizations such as RCGPs and BMA | This could be positive or negative opinion regarding the management of the NHS and/or management of the COVID crisis that impacts on GPs directly or indirectly. This excluded any tweets about general annoyance with government decisions, that could be shared by general public, and concentrated on comments relating specifically to an impact on GP working lives and wellbeing. | ***Direction, management (negative)***<br>*One huge problem is that when politicians talk about 'the NHS' they actually mean 'hospitals' and almost totally ignore the importance of primary care and public health.*<br>*I reiterated the "stick to the rules" mantra. @MattHancock - your teammates have made a farce of this while my teammates continue trying to save the lives you risk! #teamGP*<br>*Yet again @MattHancock prioritising headlines. Telling those aged 50-65 to get a flu jab with their GP without telling us first. Where are the vaccination fairies? Tomorrow is going to be chaos at our practice.*<br>*It is great the UK are going to start COVID vaccinations. Only problem, the GPs who are supposed to be organising this haven't been told anything about it!*<br>*Patients have been able to see their GPs face to face if needed throughout the pandemic. Stop blaming GPs and start addressing the failing test and trace system.*<br>*"Digital exclusion!!!!!!"... @MattHancock shows he has very little understanding about the vital role GPs play in the lives (+deaths) of so many. Remote consultations are NOT best for everyone and I will not accept his "instruction" for this to become the default option.*<br>*GPs have the infrastructure, knowledge and above all trust to run the test and trace system. We are already the gatekeepers and could provide a highly localised and nuanced system at a fraction of the cost of SERCO.*<br>*Today tens of thousands are getting their flu jabs from GP practices. It will be safe and expertly well organised and without the need to travel far. Just think how different test and trace could have been if this government invested in primary care not a private company.*<br>*Call me cynical but the delivery of the first covid vaccinations in hospitals is not about logistics but a carefully staged photo opportunity and an insult to us in primary care, given GPs and practice nurses will be deliver the majority of the vaccines.*<br>***Direction, management (positive)***<br>*I'm so pleased the government is rolling out more testing. I want to see them ensuring that all healthcare professionals have access to testing.*<br>*It is a challenging time for everyone and cool heads are required. Thank you to all at the BMA for all the work you continue to do.*<br>*I don't know how @NikkiKF does it. So much respect for her doing an awfully hard job in difficult times.* |
| Information | This is misinformation, information use and sharing and information to support GP wellbeing. | ***Misinformation (about or received by GPs)***<br>*GP surgeries are not closed. GPs have continued to prioritise care in extremely difficult circumstances to make sure that people receive the care they need – frightening the public, insulting general practice and perpetuating false rumours is dangerous. Please stop this now!* |

| | | |
|---|---|---|
| | Misinformation could be about GPs or GP surgeries (such as GPs closed or not seeing patients) or misinformation that impacts on GPs or GP work (such as mistakes in the patient shielding list or misinformation on when the public should contact a GP). Misinformation also included lack of information and information seeking (such as asking questions). Misinformation is related to GPs or GP work not general misinformation to public. | *Why are we working with version 9?? Who's has the energy to keep cleaning shielding lists? Why are patients told one moment they on and the next moment they're off the list? I'm am so livid with the whole process.*<br>*Who is writing prescriptions? I know of no GP surgeries that have close; except the ones that had to close well before the Covid due to lack of funding. I'm doing over 50hrs a week as are my colleagues. We are working remotely and getting patients in for face to face consults when deemed necessary. This is for everyone's safety.*<br>*So often in this pandemic my patients apologise for wasting my time. You are not wasting my time! We are here to care for you when you're ill and to assess and reassure if you are not - COVID or no COVID! We care and we are open!*<br>***Information use and sharing (among GPs)***<br>*Watch this walkthrough guide on how @accuRx can help your practice, improve patient safety, reduce workload and save you money*<br>*THIS is the best practical guide I have read to date regarding C19 in GPland. Coronavirus disease 2019 (covid-19): a guide for UK GPs*<br>*GPs and primary care sharing top tips and helping colleagues to cope with the challenge of rapid change due to COVID. Use #UKGPC19 for sharing ideas and good practice*<br>*Any GPs found useful resources to share with patients to teach them how to take their own pulse / respiratory rate?*<br>*I'm receiving lots of requests for sick notes for vulnerable/high risk categories patients whose employers are wanting them to continue working. Is there official guidance on this?*<br>***Information to support GP wellbeing***<br>*Many NHS staff are tired and covid weary. Join us to hear how to maximise your breaks, long or short, re-energise and reboot to help cope with what is to come. For ALL NHS staff*<br>*Today I am really pleased to welcome and open @theBMA wellbeing support group, bringing together many organisations and people with the collective aim to support the wellbeing of doctors at this very trying time.* |
| Appreciation | Some form of recognition or lack of recognition for GPs work and sacrifices. Also GPs being listened to and opinions valued or being undervalued and the target of mistreatment such as abuse or theft. Appreciation could be from Government, general public, colleagues, family, friends, neighbours, businesses. GP appreciation of others is also included here. | ***Appreciation of GPs (negative)***<br>*We will continue to deliver the unprecedented flu vax programme to protect the most vulnerable during a very difficult winter. We will do this with the backdrop of continuing criticism from some, whilst demoralised and exhausted.*<br>*The unrelenting workload and constant criticism is pushing my colleagues away. Seeing the 'supporting the NHS' narrative replaced with the customary GP bashing by some at a time when we have fewer GPs than we did in 2005 is only going to push more of my colleagues away.*<br>***Appreciation of GPs (positive)***<br>*Thanks for clapping! This gesture is massively appreciated by this GP! Now please put pressure on the government for all frontline staff to have access to adequate PPE and testing.*<br>*Clapping, praises and thanks are appreciated by GPs but what we really needed is responsible behaviour, and consideration from the public.*<br>***Appreciation of others***<br>*To my lovely neighbours who left me this, thank you! Whilst this is understandably an anxious time for everyone, look out for each other, be kind to others, especially to vulnerable people.*<br>*Thank you to the bike shop for fixing my broken bike as part of a free NHS staff bike service...safe to cycle to work again tomorrow!*<br>*I cannot justify in my head why I should get special priority shopping when I'm just doing my job (which I love and am doubly grateful to still have in these difficult times).*<br>*GPs throughout the country are working incredibly hard under very difficult circumstances and an acknowledgment of that by politicians on the BBC today is refreshing compared to the attacks we have received recently.* |

| | | |
|---|---|---|
| NHS work colleagues | Refers to work of NHS work colleagues, either in primary care, community care, secondary care or management. | ***NHS work, colleagues (positive)***<br>*Really happy to invite the BBC into my GP practice when I was working today. My clinical and admin colleagues are amazing champions of the flu vaccination programme!*<br>*Not all heroes wear capes but recently it has become evident that many of them wear NHS badges*<br>***NHS work, colleagues (negative)***<br>*I have the surreal feeling that what goes on in the NHS management centre and what goes on on the front line are operating in two separate universes.*<br>*Reviewed 10 letters from hospital colleagues stating 'GP refused to see', yet these patients all had no contact with our practice at all. This needs to be improved.*<br>*In GP land we have electronic transmission of prescriptions to community pharmacies. This has been fantastic during Covid. Why can't this be extended to secondary care?*<br>*I am a GP and I disagree with GP bashing (obviously) but in primary care we do not always work welltogether either.* |
| Personal GP experiences | These posts provide personal information about the tweeter (i.e. the GP) themselves. For example a declaration of a positive COVID test or having the COVID vaccine. In addition personal feelings related to burnout or stress (such as overwhelmed, feelings that they cannot cope or mental/emotional exhaustion.<br>Other feelings such as frustration, anger, worry, sadness, grateful, proud, tired, or other experience (e.g. physical exhaustion). | ***Experience C19 positive test/self-isolation***<br>*As of Sunday morning I started with a continuous dry cough, so have begun self-isolating. I wish I could be tested so that if negative I could resume work and my whole household wouldn't have to stay indoors for 14 days.*<br>*Happy and proud to have got my first dose of the Covid Vaccine. I feel great. Excellent work by the vaccination team*<br>***Experience burnout/stress***<br>*Completely exhausted and nearly broken but proud that I am part of an amazing team providing a fast and great response in adversity.*<br>*Feeling teary today. Every shift is harder than the last one.*<br>*Heartbroken. Mentally drained. We are living in a bad dream.*<br>*I can feel myself heading towards burnout.*<br>***Experience other feelings***<br>*Knackered and scared, but I will do carrying on doing my best as our patients deserve it.*<br>*If you are a HCP and haven't shed a few tears this week you probably don't appreciate what lies ahead.*<br>*Politicians are not listening to GPs or any signals from general practice about what is happening right now. I am living through this. I am frustrated and scared for my patients.*<br>*I feel guilty, frustrated and terribly miss being able to clinically examine a patient but I am shielding.*<br>*Tomorrow, I will be helping deliver the biggest vaccination program ever I'm proud to be part of this on such a historic day.* |
| GP workload | This may be a general statement about increasing or decreasing workload. For example, increasing workload due to changing practices due to COVID (such as remote consultations and additional cleaning). | ***Workload increase***<br>*We are carrying out more consultations per day than before COVID despite the longer consultations times. But we cannot sustain this much longer. Tired now. Low morale. And press and public alleging we are closed sitting with our feet up!*<br>*It is not just about numbers - in most instances face to face consults are much quicker compared to video consults. The biggest challenge is the increasing workload, it just feels relentless*<br>*Measuring F2F appointments as a proxy for service delivered in general practice makes no sense at a time when we are trying to protect patients by remote consulting. It is an incredibly challenging and busy time.*<br>*I am worried about the increasing number of patients broken with mental health problems, stress and anxiety. They need longer than 10 minutes, and even longer still when you are trying to support them remotely.*<br>*Please DO NOT phone GP surgeries trying to get a Covid Vaccine We are inundated with calls and requests whilst trying to do our normal work.* |

| | | |
|---|---|---|
| | | *It is not unusual to be booked until 2200 hrs with a list of econsults and tel triage that starts at 8.30 am at 10min intervals.*<br>*TEN MINUTES?? I can just about manage some of the time before covid. How can we work to 10mins face to face when you have all the extra faffing to do with donning/doffing/disinfecting chairs, couch and equipment in between patients?*<br>***Workload decrease***<br>*Normally this is an incredibly busy at this time. This is so strange.*<br>*Back in April there were 2 to 3 weeks that were very quiet very eerie.* |
| Colleagues health or wellbeing | This could be a general statement about anxiety, depression or burnout or COVID illness or death among NHS colleagues or family working in general practice. | *Concern about colleague health, wellbeing (depression, burnout, etc.)*<br>*In primary care the mental and emotional health of our staff is being affected by increasing complaints and verbal abuse from a small but significant minority of patients.*<br>*Our workforce is exhausted, burnt out, isolated or sick.*<br>*Seen so many colleagues suffering during this pandemic with anxiety and stress. We need to pull together.* |
| Risks to GPS | This is in the form of the dangers of the occupation in terms of catching COVID and death. This can be to the GP themselves and their families to whom they may transmit it. | ***Risks to GPs themselves***<br>*GPs are highly vulnerable as we see many ill patients every single day. We could be super spreaders and should be given priority testing and adequate PPE*<br>*Whilst we in primary care work our absolute hardest, and risk our lives to help others against COVID it's so insulting to see people going on nights out, ignoring the seriousness of it all and carrying on as normal. If we can risk our lives and stay at work for you, you can get bored and stay home for us.*<br>*I risk my life every day and all I have to look forward to is tax increases, exhaustion, potential death and a clap every Thursday night.*<br>*Not sure the staff in supermarkets examine many earholes or anuses or throats or vaginas or skin rashes or scalps or testicles and therefore tend not get as close and personal with their customers. Maybe I'm missing something here. Bias or bitterness?*<br>*This is sadly yet another example of the perception that Covid is only a secondary care matter. We see more patients than our colleagues in secondary care, is it's not conceivable that our exposure is at least as high?*<br>***Risks to GPs families***<br>*Our 5 year old thinks I don't love him anymore because I daren't get too close. How do I explain social distancing to the children of the unprotected, untested NHS front liners!*<br>***Risks to BAME GPs***<br>*In the UK 12 GPs have died from COVID-19 and 11 were BAME*<br>*We need appropriate measures in place to protect BAME colleagues who are more at risk* |
| Communication | Communication, integration or collaboration between primary care and other NHS departments or sectors such as secondary care. | ***Communication (positive)***<br>*Brilliant to see the NHS PrimaryCare and SDEC working together to manage COVID19 in the community.*<br>*Really proud of the collaborative work being done to support the Covid vaccine delivery. Communication at its absolute best.*<br>***Communication (negative)***<br>*The pandemic has highlighted the long-overdue need to knock down the Berlin wall between primary and secondary care that works against patient care and HCP stress and job satisfaction.*<br>*I would never pass judgement on hospital staff workload especially on social media. Most hospital doctors have never done a GP rotation. So why do some think it's ok to pass judgement on GPs?* |

| | | |
|---|---|---|
| Self-care of GPs in reference to their wellbeing | This could be taking action to help with their wellbeing or work-life balance. For example, going on a course on wellbeing, or taking a walk to relieve the stress. This needs to be explicitly stated to be related to their wellbeing. Activities such as watching football or going for a walk with no mention of impact on wellbeing were excluded. | ***Self-care (positive)***<br>*We need to maximise all self-care and kindness just for us to survive this intact. Don't forget to take care of yourself both mentally and physically. This is a difficult time for many. I have been taking my own advice and keeping a diary of my thoughts and feelings. It does helps..*<br>*Busy couple of days covering Annual leave. It is so important to take a break to protect wellbeing even in the middle of a pandemic.*<br><br>***Self-care (negative)***<br>*No amount of self-care or resilience training will reverse the unprecedented levels of stress faced by general practitioners in the NHS today.* |

*Quotations were paraphrased to anonymise individuals, while still providing examples of commentary by theme.

THE UNIVERSITY of York

Version 2.0 (20/01/2021)

# Exploring the impact of COVID-19 on GPs' wellbeing

We would like to invite you to take part in a research study. Before you decide, it is important for you to understand why this research is being done and what it would involve for you. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Thank you for reading this.

**What is the purpose of the study?**

Pre-COVID-19, the NHS workforce was described as 'at breaking point' and, in general practice, increasing rates of stress and burnout were reported; threatening the mental health of general practitioners, but also patient care and the sustainability of the health care system. During the COVID-19 pandemic there have been many new sources of stress for GPs, who have had to adapt quickly to the disease, responding to changing guidelines and rapidly introducing new ways of working. There have also been concerns around managing 'long COVID' in the community, as well as worries about PPE and the safety of families, friends and colleagues. Some of the recent changes, however, might have the potential to reduce stress and even improve the working lives of some GPs.

These interviews are part of a wider study investigating GPs' wellbeing during COVID-19, which aims to inform future government policy. Interviews will explore challenges and causes of stress, as well as facilitators that may have improved working practices, or could be used to reduce job stress amongst GPs in the future.

**Why am I being asked to take part?**

As part of the project we are interviewing GPs to explore, in depth, GPs' views and lived experiences during COVID-19 and the potential impact on their wellbeing. You have been selected as a UK GP and we are keen to talk to you more about your experiences.

**Do I have to take part?**

No. It is entirely up to you to decide whether you would like to take part. If you have any questions, you are welcome to talk to a member of the research team. Even if you have agreed to take part, you are free to withdraw from the study at any time, without giving a reason. If withdrawing after data analysis has taken place, your data may be included in analyses, though no data will identify any participants in any way.

**What will happen to me if I take part?**

If you decide that you would like to take part in the study, we will send you a consent form electronically to read and discuss briefly before the interview. We will then ask you to give verbal consent during the interview.

A researcher will approach you to arrange a time to conduct the interview that best suits you. Due to current social distancing restrictions, interviews will take place remotely either by telephone or videoconference call. The interview will last up to 60 minutes and will be used to find out more information about your experiences of working during COVID-19 and the impact on your wellbeing.

With your permission, the interview will be recorded, and sections may be transcribed for analysis. A confidentiality agreement will be in place for any third party organisation used to transcribe interviews. Audio recordings will be retained for the purposes of analysis for the duration of the study. Direct quotations may be used in publications, but no information will be released or printed that would identify you.

You will be given a unique study number for the duration of the study so that your name and organisation will not be used in any publications and will not be made available outside the research team.

**What are the possible benefits of taking part?**

The findings of this study will develop a better understanding of the impact of COVID-19 on the wellbeing of GPs, and inform future policy during the recovery period, with the goal of improving resilience and retention of GPs. In addition, an honorarium is offered to participants (see below).

**What are the possible disadvantages or risks of taking part?**

Due to the nature of this study, it is possible that interviewees may disclose upsetting and emotive information during interviews. We have consulted with expert advisors and GPs in designing this research so that interviews are planned and undertaken in a sensitive manner. In the event of any distress, interviewees may pause or stop the interview at any time and participants are not under any pressure to answer any questions they do not want to. If necessary, we will direct participants to resources for support (including local occupational health service or resources through GPonline.com and the 'NHS Practitioner Health' service).

**Expenses and payments**

We will arrange interviews at a time convenient to you. As a goodwill gesture, each participant will be offered a £100 honorarium for taking part.

**What will happen to data that are collected about me?**

The University of York is the sponsor for this study based in the United Kingdom. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly.

The University of York is a publicly funded organisation that conducts research to improve health, care and services. Research following the UK Policy Framework for Health and Social Care Research is conducted to serve the interests of society as whole. This means that the University of York is using the legal basis provided under the General Data Protection Regulation (GDPR) of 'a task in the public interest' to use your personal data for this research. Your rights to access, change or move your information are limited, as we need to manage your information in specific ways in order for the research to be reliable and accurate. If you decide to change your mind about taking part in the study, you can request that the data collected be destroyed. Data may be included in analysis if withdrawing beyond the point of analysis, though no data will identify you in any way. To safeguard your rights, we will use the minimum personally identifiable information possible. In the unlikely event that you disclose information that may threaten patient safety, the researcher will report this information via routine incident reporting mechanisms.

We will remove all names and other identifying information before the data are analysed and results presented. Any records that identify you will be held separately to the other information we collect and your data will be held in a secure location. Only researchers that are part of the research team in York will have access to the data. Data will be stored for 5 years, to enable analysis and publication and will then be destroyed. Further information can be found at the University of York webpages Our research is compliant with the GDPR and the Data Protection Act 2018. Further information about this and how we manage data is available at the following links:

https://www.york.ac.uk/records-management/dp/

https://www.york.ac.uk/records-management/dp/guidance/gdprcompliantresearch/

https://www.york.ac.uk/records-management/dp/your-info/generalprivacynotice/

**Who has reviewed this study?**
This study has been ethically reviewed by the University of York's Department of Health Sciences' Research Governance Committee and by the Health Research Authority (IRAS 292547).

**Who is organising and funding this research?**

The research is funded by the NIHR Policy Research Programme. The research funding covers only the costs of undertaking the research; researchers will not receive payment for conducting the study. Findings will be reported in aggregated form, interviewees and organisations will not be named or otherwise identifiable when findings are reported.

**Who can I contact for more information?**


If you have any queries about the study please contact:

Dr Laura Jefferson
Research Fellow
Department of Health Sciences
Area 4 Seebohm Rowntree Building
University of York
Heslington
York YO10 5DD

Email: laura.jefferson@york.ac.uk

If you need to make a complaint or speak to someone independent, please contact:

Prof Patrick Doherty
Chair of Research Committee
Department of Health Sciences
Area 4 Seebohm Rowntree Building
University of York
Heslington
York

Email: patrick.doherty@york.ac.uk


**Data Protection**

If you wish to raise a complaint on how we have handled your personal data, you can contact the University of York's Data Protection Officer who will investigate the matter (dataprotection@york.ac.uk).

If you are not satisfied with our response or believe we are processing your personal data in a way that is not lawful you can complain to the Information Commissioner's Office (ICO) whose details can be found here: https://ico.org.uk/.

**Thank you for reading this information sheet and for considering whether to take part in this study.**

THE UNIVERSITY of York

Version 2.0 (20/01/2021)

**CONSENT FORM**

.
**Participant Identification Number:** | | | | |

**Title of study:** Exploring the impact of COVID-19 on GPs' wellbeing

**Please initial the boxes to confirm verbal consent given**

1. I confirm that I have read and understand the information sheet version 4.0 dated 20/01/21 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving reason. ☐

3. I agree to this consent form and other data collected as part of this research study being kept at the University of York. ☐

4. I understand that relevant sections of data collected during the study may be looked at by individuals from the University of York and from regulatory authorities. I give permission for these individuals to have access to these records. ☐

5. I agree to the interviews being audio recorded and sections transcribed. ☐

6. I understand that direct quotations may be used in publications, but no information will be released or printed that would identify me. ☐

7. I understand and agree that the research team will securely store my identifiable details in order to contact me in future regarding this study (e.g. telephone/text/email). Identifiable details, including a copy of the consent form, will be available only to the research team, other than for purposes of monitoring and audit. ☐

8. I agree to take part in the above study. ☐

_____ _____

Name of participant *(please print)* Date verbal consent given

_____ _____

Name of person taking consent *(please print)* Date

# Participant Approach Survey

Version 1.0 (09/12/2020)

## Introduction:

### GP interviews to explore the impact of COVID-19 on GP wellbeing

We would like to interview you as part of a research study exploring the impact of the COVID-19 pandemic on the wellbeing of GPs. The study is funded by the NIHR Policy Research Programme. GPs have reported increasing levels of job stress and risk of burnout over recent years; this may be affected by changes to general practice during the COVID-19 pandemic. This research study aims to explore GP's experiences in order to inform future policy.

We would very much welcome your contribution to this important and timely research. Your participation will remain anonymous and any published data will not include identifiable information about participants, their GP practice, or Primary Care Network. Interviews, lasting up to one hour, will take place remotely at a time convenient to you, and you will be offered a £100 honorarium as a goodwill gesture for your time. Participation is voluntary and you can withdraw at any time without giving a reason. All personal information and data collected for research purposes will be collected, stored and accessed by the University of York research team according to the General Data Protection Regulations and Data Protection Act 2018.

If you are interested in sharing your experiences, please provide contact information and demographic information (for the purposes of sampling), so that a member of the research team can contact you to discuss further.

By clicking on the link here, you agree that you are a GP currently working in NHS practice and you consent to being contacted about participation in this research study.



>> Next page:

Please give your name (forced response)

Please give your email address (forced response)



>> Next page:

1. How old are you? (<30, 30-39, 40-49, 50-59, 60-69, >70)

2. What is your ethnic group? Choose one option that best describes your ethnic group or background

    a. White
        i. English / Welsh / Scottish / Northern Irish / British
        ii. Irish
        iii. Gypsy or Irish Traveller
        iv. Any other White background, please describe
    b. Mixed / Multiple ethnic groups
        i. White and Black Caribbean
        ii. White and Black African
        iii. White and Asian
        iv. Any other Mixed / Multiple ethnic background, please describe
    c. Asian / Asian British
        i. Indian
        ii. Pakistani
        iii. Bangladeshi
        iv. Chinese
        v. Any other Asian background, please describe
    d. Black / African / Caribbean / Black British
        i. African
        ii. Caribbean
        iii. Any other Black / African / Caribbean background, please describe
    e. Other ethnic group
        i. Arab
        ii. Any other ethnic group, please describe

3. Gender (male/female/prefer not to say)

4. Contract type (GP trainee, salaried GP, GP partner, locum)

5. Where are you based? (NE, NW, Yorkshire and the Humber, East of England, East Midlands, West Midlands, SE, SW, London, Scotland, Wales, Northern Ireland)

*We thank you for your time spent taking this survey. Your response has been recorded.*

# References


Academy of Medical Royal Colleges (2020). Appraisal and revalidation during COVID-19. Available online: https://www.aomrc.org.uk/revalidation-cpd/appraisal-revalidation-during-covid-19/#:~:text=For%20most%20designated%20bodies%2C%20appraisals,recommendation%20arrangements%20in%20March%202020.&text=Nevertheless%2C%20it%20is%20expected%20that,circumstances%2C%20using%20the%20new%20processes. (last accessed 05/08/21).

Alomari, E., I. Katib, A. Albeshri and R. Mehmood (2021). "COVID-19: Detecting Government Pandemic Measures and Public Concerns from Twitter Arabic Data Using Distributed Machine Learning." International Journal of Environmental Research and Public Health **18**(1): 282.

Alrawashdeh, H. M., A. B. Al-Tammemi, M. K. Alzawahreh, A. Al-Tamimi, M. Elkholy, F. Al Sarireh, M. Abusamak, N. M. K. Elehamer, A. Malkawi, W. Al-Dolat, L. Abu-Ismail, A. Al-Far and I. Ghoul (2021). "Occupational burnout and job satisfaction among physicians in times of COVID-19 crisis: a convergent parallel mixed-method study." BMC public health **21**(1): 811.

Amerio, A., D. Bianchi, F. Santi, L. Costantini, A. Odone, C. Signorelli, A. Costanza, G. Serafini, M. Amore and A. Aguglia (2020). "Covid-19 pandemic impact on mental health: a web-based cross-sectional survey on a sample of Italian general practitioners." Acta Biomed **91**(2): 83-88.

Aquilina, M. (2021). "Beyond the clinical coalface: utilising the transferable skills and expertise of former GPs within the NHS." Br J Gen Pract **71**(703): 74.

Babvey, P., F. Capela, C. Cappa, C. Lipizzi, N. Petrowski and J. Ramirez-Marquez (2021). "Using social media data for assessing children's exposure to violence during the COVID-19 pandemic." Child Abuse & Neglect **116**: 104747.

Baptista, S., A. Teixeira, L. Castro, M. Cunha, C. Serrao, A. Rodrigues and I. Duarte (2021). "Physician Burnout in Primary Care during the COVID-19 Pandemic: A Cross-Sectional Study in Portugal." Journal of primary care & community health **12**: 21501327211008437.

BMA (2019). Caring for the mental health of the medical workforce. Available online: https://www.bma.org.uk/media/1365/bma-caring-for-the-mental-health-survey-oct-2019.pdf (last accessed 05/08/21). London.

BMA (2021). BMA Mental Wellbeing Charter. . British Medical Association. London.

BMA (2021). Wellbeing during COVID webpages. Available online at: https://www.bma.org.uk/advice-and-support/covid-19 (last accessed 05/08/21).

BMA and RCGP (2021). COVID-19 workload prioritisation unified guidance. London.

Carville, O., E. Court and K. Brown (2020). "Hospitals Tell Doctors They'll Be Fired If They Speak Out About Lack of Gear. March 31, 2020." Bloomberg Law.

Castelli, L., M. Di Tella, A. Benfante, A. Taraschi, G. Bonagura, A. Pizzini and A. Romeo (2021). "The psychological impact of COVID-19 on general practitioners in Piedmont, Italy." Journal of Affective Disorders **281**: 244-246.

Consultant connect. (2021). "Enhanced advice and guidance for the NHS." Retrieved 14/07/21, from https://www.consultantconnect.org.uk/

Critical Appraisal Skills Programme (2018). CASP Qualitative Checklist. Available online: https://casp-uk.net/wp-content/uploads/2018/01/CASP-Qualitative-Checklist-2018.pdf (last accessed 05/08/21).

Deci, E. and R. Ryan (1985). Intrinsic motivation and self-determination in human behavior. US, Springer.

Di Monte, C., S. Monaco, R. Mariani and M. Di Trani (2020). "From Resilience to Burnout: Psychological Features of Italian General Practitioners During COVID-19 Emergency." Front Psychol **11**: 567201.

Dutour, M., A. Kirchhoff, C. Janssen, S. Meleze, H. Chevalier, S. Levy-Amon, M.-A. Detrez, E. Piet and T. Delory (2021). "Family medicine practitioners' stress during the COVID-19 pandemic: a cross-sectional survey." BMC Fam Pract **22**.

Dutour, M., A. Kirchhoff, C. Janssen, S. Meleze, H. Chevalier, S. Levy-Amon, M. A. Detrez, E. Piet and T. Delory (2021). "Family medicine practitioners' stress during the COVID-19 pandemic: a cross-sectional survey." BMC Fam Pract **22**(1): 36.

Dyer, J. and B. Kolic (2020). "Public risk perception and emotion on Twitter during the Covid-19 pandemic." Applied Network Science **5**(1): 1-32.

Filfilan, N. N., E. Y. Alzhrani, R. F. Algethamy, R. H. Fattah, W. A. Alshehri, B. A. Althobaity and R. K. Althobaity (2020). "Psychosocial Impact of COVID-19 on Family Physicians in the Kingdom of Saudi Arabia." World Family Medicine **18**(12): 91-97.

Gao, Y., Z. Xie and D. Li (2021). "Electronic Cigarette Users' Perspective on the COVID-19 Pandemic: Observational Study Using Twitter Data." JMIR Public Health and Surveillance **7**(1): e24859.

General Medical Council (2018). The medical workforce. The state of medical education and practice in the UK, General Medical Council.

Gerada, C. (2020). "Clare Gerada: GPs-scapegoats and saviours, heroes and villains." BMJ **371**: m4187.

Gerada, C. (2021). "General practice in crisis: stop skinning the cat." Br J Gen Pract.

Gibson, J., K. Checkland, A. Coleman, M. Hann, R. McCall, S. Spooner and M. Sutton (2015). "Eighth National GP Worklife Survey." Manchester: Policy Research Unit in Commissioning and the Healthcare System Manchester Centre for Health Economics.

Gibson, J., M. Sutton, S. Spooner and K. Checkland (2018). "Ninth National GP Worklife Survey. ." University of Manchester: Policy Research Unit in Commissioning and the Healthcare System Manchester Centre for Health Economics.

GMC (2019). Caring for doctors, caring for patients: how to transform UK healthcare environments to support doctors and medical students to care for patients. Available online: https://www.gmc-uk.org/-/media/documents/caring-for-doctors-caring-for-patients_pdf-80706341.pdf (last accessed 05/08/21).

GMC (2019). The state of medical education and practice in the UK. Available online: https://www.gmc-uk.org/about/what-we-do-and-why/data-and-research/the-state-of-medical-education-and-practice-in-the-uk (last accessed 05/08/21).

Gokdemir, O., H. Pak, M. Bakola, S. Bhattacharya, K. Hoedebecke and E. Jelastopulu (2020). "Family Physicians' Knowledge about and Attitudes towards COVID-19 - A Cross-sectional Multicentric Study." Infect Chemother **52**(4): 539-549.

Gold, K. J., A. R. Laurie, D. R. Kinney, K. M. Harmes and D. C. Serlin (2021). "Video Visits: Family Physician Experiences With Uptake During the COVID-19 Pandemic." Family medicine **53**(3): 207-210.

Gomez, T., Y. B. Anaya, K. J. Shih and D. M. Tarn (2021). "A Qualitative Study of Primary Care Physicians' Experiences with Telemedicine during COVID-19." Journal of the American Board of Family Medicine **34**: S61-S70.

Guntuku, S. C., G. Sherman, D. C. Stokes, A. K. Agarwal, E. Seltzer, R. M. Merchant and L. H. Ungar (2020). "Tracking Mental Health and Symptom Mentions on Twitter During COVID-19." J Gen Intern Med **35**(9): 2798-2800.

Health and Social Care Board, Northern Ireland (2021) Available online at: **http://www.hscboard.hscni.net/our-work/integrated-care/gps/gps-current-facts-and-figures/ (last accessed 06/09/21)**

Health Foundation (2021). Use of primary care during the COVID-19 pandemic: May 2021 update. Patient-level data analysis of the impact of COVID-19 on primary care activity in England.

Herrett, E., A. M. Gallagher, K. Bhaskaran, H. Forbes, R. Mathur, T. van Staa and L. Smeeth (2015). "Data Resource Profile: Clinical Practice Research Datalink (CPRD)." Int J Epidemiol **44**(3): 827-836.

Higgins, J., J. Thomas, J. Chandler, M. Cumpston, T. Li, M. Page and V. e. Welch (2021). Cochrane Handbook for Systematic Reviews of Interventions version 6.2 (updated February 2021). Cochrane. Available from www.training.cochrane.org/handbook.

Hilbert, B., M. Krauthausen, H. Schrader and A. Simmenroth (2020). "The impact of the corona pandemic on working life of young family physicians an online survey among members of jade (Junge allgemeinmedizin deutschland). [German]." Zeitschrift fur Allgemeinmedizin **96**(12): 508-513.

Huang, F., H. Ding, Z. Liu, P. Wu, M. Zhu, A. Li and T. Zhu (2020). "How fear and collectivism influence public's preventive intention towards COVID-19 infection: a study based on big data from the social media." BMC Public Health **20**(1): 1-9.

Imo, U. O. (2017). "Burnout and psychiatric morbidity among doctors in the UK: a systematic literature review of prevalence and associated factors." BJPsych bulletin **41**(4): 197-204.

Jahan, F., N. M. I. Al Zadjali, M. Siddiqui and S. A. M. Al Moqbali (2021). "Mental health status among health care workers in primary care exposed to COVID-19 pandemic in North Batinah, Oman." European Journal of Molecular and Clinical Medicine **8**(3): 1268-1280.

Jefferson, L., K. Bloor and A. Maynard (2015). "Women in medicine: historical perspectives and recent trends." Br Med Bull **114**(1): 5-15.

Joanna Briggs Institute (2017). Checklist for Analytical Cross Sectional Studies. Available online: https://joannabriggs.org/sites/default/files/2019-05/JBI_Critical_Appraisal-Checklist_for_Analytical_Cross_Sectional_Studies2017_0.pdf (last accessed 05/08/21).

Kane, L. (2019). Medscape National Physician Burnout, Depression and suicide report 2019. .

Karami, A. and M. Anderson (2020). "Social media and COVID-19: Characterizing anti-quarantine comments on Twitter." Proc Assoc Inf Sci Technol **57**(1): e349.

Kim, A. E., H. M. Hansen, J. Murphy, A. K. Richards, J. Duke and J. A. Allen (2013). "Methodological considerations in analyzing Twitter data." J Natl Cancer Inst Monogr **2013**(47): 140-146.

King's Fund (2019). Closing the gap report. Chapter 7: modelling the impact of reform and funding on nursing and GP shortages: Available online: https://www.kingsfund.org.uk/sites/default/files/2019-03/closing-the-gap-health-care-workforce-full-report.pdf#page=107 (last accessed 05/08/21).

King's Fund (2019). Introduction to Closing the Gap Report: Available online: https://www.kingsfund.org.uk/publications/closing-gap-health-care-workforce (last accessed 05/08/21).

King's Fund (2021). Developing place-based partnerships: The foundation of effective integrated care systems. . K. s. Fund. London.

King's Fund (2021). NHS Workforce: our position: Available online: https://www.kingsfund.org.uk/projects/positions/nhs-workforce (last accessed 05/08/21).

King's Fund (2021). Understanding integration: how to listen to and learn from people and communities. K. s. Fund. London.

Koh, J. X. and T. M. Liew (2020). "How loneliness is talked about in social media during COVID-19 pandemic: text mining of 4,492 Twitter feeds." Journal of psychiatric research.

Lange, M., S. Joo, P. A. Couette, F. Le Bas and X. Humbert (2021). "Impact on mental health of the COVID-19 outbreak among general practitioners during the sanitary lockdown period." Irish Journal of Medical Science.

Lange, M., S. Joo, P. A. Couette, F. Le Bas and X. Humbert (2021). "Impact on mental health of the COVID-19 outbreak among general practitioners during the sanitary lockdown period." Ir J Med Sci: 1-4.

Lau, J., D. H. Y. Tan, G. J. Wong, Y. J. Lew, Y. X. Chua, L. L. Low, H. K. Ho, T. S. Kwek, S. A. E. S. Toh and K. K. Tan (2020). Prepared and highly committed despite the risk of COVID-19 infection: A cross-

sectional survey of primary care physicians' concerns and coping strategies in Singapore Preprint: MedRxiv.

Lau, J., D. H. Y. Tan, G. J. Wong, Y. J. Lew, Y. X. Chua, L. L. Low, G. C. H. Koh, T. S. Kwek, S. A. E. S. Toh and K. K. Tan (2021). "The impact of COVID-19 on private and public primary care physicians: A cross-sectional study." Journal of Infection and Public Health **14**(3): 285-289.

Lee, E. S., S. Y. Tan, P. S. S. Lee, H. L. Koh, S. W. W. Soon, K. Sim, W. E. Tang and P. N. Chong (2020). "Perceived stress and associated factors among healthcare workers in a primary healthcare setting: the Psychological Readiness and Occupational Training Enhancement during COVID-19 Time (PROTECT) study." Singapore medical journal. **02**.

Lee, H., E. B. Noh, S. H. Choi, B. Zhao and E. W. Nam (2020). "Determining public opinion of the COVID-19 pandemic in South Korea and Japan: Social network mining on Twitter." Healthcare informatics research **26**(4): 335.

Lum, A., Y.-L. Goh, K. S. Wong, J. Seah, G. Teo, J. Q. Ng, E. Abdin, M. M. Hendricks, J. Tham, W. Nan and D. Fung (2021). "Impact of Covid-19 on the mental health of singaporean GPs: a cross-sectional study." BJGP Open: BJGPO.2021.0072.

Lum, A., Y. L. Goh, K. S. Wong, J. Seah, G. Teo, J. Q. Ng, E. Abdin, M. M. Hendricks, J. Tham, W. Nan and D. Fung (2021). "Impact of COVID-19 on the mental health of Singaporean GPs: a cross-sectional study." BJGP Open.

Lwin, M. O., J. Lu, A. Sheldenkar, P. J. Schulz, W. Shin, R. Gupta and Y. Yang (2020). "Global Sentiments Surrounding the COVID-19 Pandemic on Twitter: Analysis of Twitter Trends." JMIR Public Health Surveill **6**(2): e19447.

Maslach, C. and M. P. Leiter (2016). "Understanding the burnout experience: recent research and its implications for psychiatry." World Psychiatry **15**(2): 103-111.

Maunder, R. G., W. J. Lancee, K. E. Balderson, J. P. Bennett, B. Borgundvaag, S. Evans, C. M. Fernandes, D. S. Goldbloom, M. Gupta, J. J. Hunter, L. McGillis Hall, L. M. Nagle, C. Pain, S. S. Peczeniuk, G. Raymond, N. Read, S. B. Rourke, R. J. Steinberg, T. E. Stewart, S. VanDeVelde-Coke, G. G. Veldhorst and D. A. Wasylenki (2006). "Long-term psychological and occupational effects of providing hospital healthcare during SARS outbreak." Emerg Infect Dis **12**(12): 1924-1932.

McKinley, N., R. S. McCain, L. Convie, M. Clarke, M. Dempster, W. J. Campbell and S. J. Kirk (2020). "Resilience, burnout and coping mechanisms in UK doctors: a cross-sectional study." BMJ Open **10**(1): e031765.

MIND. (2018). "40 per cent of GP appointments about mental health." Retrieved 14/07/21, from https://www.mind.org.uk/news-campaigns/news/40-per-cent-of-all-gp-appointments-about-mental-health/.

Moher, D., A. Liberati, J. Tetzlaff, D. G. Altman and P. Group (2009). "Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement." BMJ **339**: b2535.

Monterrosa-Castro, A., C. Buelvas-de-la-Rosa and E. Ordosgoitia-Parra (2021). "Probable generalized anxiety disorders in the COVID-19 pandemic: assessment in general practitioners in the Colombian Caribbean." Duazary **18**(1): 7-19.

Monterrosa-Castro, A., V. Redondo-Mendoza and M. Mercado-Lara (2020). "Psychosocial factors associated with symptoms of generalized anxiety disorder in general practitioners during the COVID-19 pandemic." J Investig Med **68**(7): 1228-1234.

Morgantini, L. A., U. Naha, H. Wang, S. Francavilla, O. Acar, J. M. Flores, S. Crivellaro, D. Moreira, M. Abern, M. Eklund, H. T. Vigneswaran and S. M. Weine (2020). "Factors contributing to healthcare professional burnout during the COVID-19 pandemic: A rapid turnaround global survey." PLoS One **15**(9): e0238217.

Moussa, R., F. Alhor and M. Aseel (2020). "Does it Rain after the Storm. Family medicine resident's reflection at Qatar: Results From a cross sectional study." World Family Medicine **18**(12): 108-117.

Naylor, C. (2021). Integrated care systems are an opportunity to reset the relationship between health services and the public.

NHS (2019). The NHS long term plan. Available online: https://www.longtermplan.nhs.uk/ (last accessed 05/08/21).

NHS (2020). Investment and evolution: A five year framework for GP contract reform to implement The NHS Long Term Plan:.

NHS (2020). We Are the NHS: People Plan 2020/21 – action for us all. Available online: https://www.england.nhs.uk/wp-content/uploads/2020/07/We_Are_The_NHS_Action_For_All_Of_Us_FINAL_24_08_20.pdf (last accessed 05/08/21).

NHS Digital. (2021). "General Practice Workforce 31 March 2021." from Available online: https://digital.nhs.uk/data-and-information/publications/statistical/general-practice-workforce-archive/31-march-2021 (last accessed 06/09/21)

NHS England (2021). Advice and guidance. Available online at: https://www.england.nhs.uk/elective-care-transformation/best-practice-solutions/advice-and-guidance/ (last accessed 05/08/21).

NHS England (2021). "GP access letter. Available online at: https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/B0497-GP-access-letter-May-2021-FINAL.pdf (last accessed 05/08/21)."

NHS England and Improvement (2021). 2021/22 priorities and operational planning guidance.

NHS England and NHS Improvement (2020). Network Contract Directed Enhanced Service: guidance for 2020/21 in England. Available online: https://www.england.nhs.uk/wp-content/uploads/2020/03/network-contract-des-guidance-2020-21.pdf (last accessed 05/08/21).

Ortega-Galan, A. M., M. D. Ruiz-Fernandez, M. J. Lirola, J. D. Ramos-Pichardo, O. Ibanez-Masero, J. Cabrera-Troya, V. Salinas-Perez, P. A. Gomez-Beltran and E. Fernandez-Martinez (2020).

"Professional Quality of Life and Perceived Stress in Health Professionals before COVID-19 in Spain: Primary and Hospital Care." Healthcare **8**(4): 10.

Orton, P., C. Orton and D. Pereira Gray (2012). "Depersonalised doctors: a cross-sectional study of 564 doctors, 760 consultations and 1876 patient reports in UK general practice." BMJ Open **2**(1): e000274.

Osakwe, Z. T., I. Ikhapoh, B. K. Arora and O. M. Bubu (2021). "Identifying public concerns and reactions during the COVID-19 pandemic on Twitter: A text-mining analysis." Public Health Nursing **38**(2): 145-151.

Public Health Scotland (2020) General practice workforce. Available online at: **https://publichealthscotland.scot/publications/general-practice-gp-workforce-and-practice-list-sizes/general-practice-gp-workforce-and-practice-list-sizes-2010-2020/** (last accessed 06/09/21)

Rao, S. A., M. S. Ravi, J. W. Zhao, C. Sturgeon and K. Y. Bilimoria (2020). "Social Media Responses to Elective Surgery Cancellations in the Wake of COVID-19." Ann Surg **272**(3): e246-e248.

RCGP (2020). General practice in the post-COVID world: challenges and opportunities for general practice. Available online: https://www.rcgp.org.uk/-/media/Files/News/2020/general-practice-post-covid-rcgp.ashx?la=en (last accessed 05/08/21).

RCGP (2021). "The future role of remote consultations and patient 'triage': General practice COVID-19 recovery. Available online: https://www.rcgp.org.uk/-/media/Files/Policy/future-role-of-remote-consultations-patient-triage.ashx (last accessed 05/08/21)."

Ritchie, J. and L. Spencer (1994). Qualitative Data Analysis for Applied Policy Research. Analyzing Qualitative Data. A. a. B. Bryman, B. London, Routledge.

Rolls, K., M. Hansen, D. Jackson and D. Elliott (2016). "How Health Care Professionals Use Social Media to Create Virtual Communities: An Integrative Review." J Med Internet Res **18**(6): e166.

Rossi, R., V. Socci, F. Pacitti, S. Mensi, A. Di Marco, A. Siracusano and G. Di Lorenzo (2020). "Mental Health Outcomes Among Healthcare Workers and the General Population During the COVID-19 in Italy." Front Psychol **11**: 608986.

Royal College of General Practitioners (2021). Wellbeing webpages. Available online at: https://www.rcgp.org.uk/training-exams/practice/gp-wellbeing.aspx (last accessed 05/08/21).

Salisbury, H. (2021). "Helen Salisbury: GPs deserve better than this micromanagement." BMJ **373**: n1256.

Shanafelt, T. D., S. Boone, L. Tan, L. N. Dyrbye, W. Sotile, D. Satele, C. P. West, J. Sloan and M. R. Oreskovich (2012). "Burnout and satisfaction with work-life balance among US physicians relative to the general US population." Arch Intern Med **172**(18): 1377-1385.

Sitanggang, F. P., G. B. S. Wirawan, I. M. A. Wirawan, C. B. J. Lesmana and P. P. Januraga (2021). "Determinants of Mental Health and Practice Behaviors of General Practitioners During COVID-19

Pandemic in Bali, Indonesia: A Cross-sectional Study." Risk Management & Healthcare Policy **14**: 2055-2064.

Skalski, P. D., K. A. Neuendorf and J. A. Cajigas (2017). Content analysis in the interactive media age. Content analysis in the interactive media age. Content Analysis Guidebook 2nd Edition. N. K. Thousand Oaks, CA: SAGE Publications, Inc**:** 201-242.

Sloan, L., J. Morgan, P. Burnap and M. Williams (2015). "Who Tweets? Deriving the Demographic Characteristics of Age, Occupation and Social Class from Twitter User Meta-Data." PLOS ONE **10**(3): e0115545.

Sloan, L., J. Morgan, W. Housley, M. Williams, A. Edwards, P. Burnap and O. Rana (2013). "Knowing the Tweeters: Deriving Sociologically Relevant Demographics from Twitter." Sociological Research Online **18**(3): 74-84.

Soares, A., P. Thakker, E. Deych, S. Jain and R. K. Bhayani (2021). "The Impact of COVID-19 on Dual-Physician Couples: A Disproportionate Burden on Women Physicians." J Womens Health (Larchmt) **30**(5): 665-671.

Sotomayor-Castillo, C., S. Nahidi, C. Li, C. Hespe, P. L. Burns and R. Z. Shaban (2021). "General practitioners' knowledge, preparedness, and experiences of managing COVID-19 in Australia." Infection, Disease and Health.

Stafie, C. S., L. Profire, M. M. Apostol and I. I. Costache (2021). "The professional and psycho-emotional impact of the COVID- 19 pandemic on medical care-a Romanian GPS' perspective." International Journal of Environmental Research and Public Health **18**(4): 1-14.

Su, Y., J. Xue, X. Liu, P. Wu, J. Chen, C. Chen, T. Liu, W. Gong and T. Zhu (2020). "Examining the Impact of COVID-19 Lockdown in Wuhan and Lombardy: A Psycholinguistic Analysis on Weibo and Twitter." Int J Environ Res Public Health **17**(12).

Sullivan, K. J., M. Burden, A. Keniston, J. M. Banda and L. E. Hunter (2021). "Characterization of Anonymous Physician Perspectives on COVID-19 Using Social Media Data." Pac Symp Biocomput **26**: 95-106.

Ta, S. B., G. Ozceylan, G. Z. Ozturk and D. Toprak (2020). "Evaluation of Job Strain of Family Physicians in COVID-19 Pandemic Period- An Example from Turkey." J Community Health.

Taylor, A. K., T. Kingstone, T. A. Briggs, C. A. O'Donnell, H. Atherton, D. N. Blane and C. A. Chew-Graham (2021). "'Reluctant pioneer': A qualitative study of doctors' experiences as patients with long COVID." Health expectations : an international journal of public participation in health care and health policy. **22**.

Toselli, M., I. Palazzi, M. Lambertini, A. Maurizzi, A. Cereda, A. Khokhar, S. Landi, F. Toscano and G. Marasco (2021). "Teachings after COVID-19 Outbreak from a Survey of Family Physicians." Journal of the American Board of Family Medicine **34**: S222-S224.

Trivedi, N., V. Trivedi, A. Moorthy and H. Trivedi (2020). "Recovery, restoration, and risk: a cross-sectional survey of the impact of COVID-19 on GPs in the first UK city to lock down." BJGP Open **5**(1).

Tse, D. M. S., Z. Li, Y. Lu, Y. Li, Y. Liu and W. C. W. Wong (2020). "Fighting against COVID-19: preparedness and implications on clinical practice in primary care in Shenzhen, China." BMC family practice **21**(1): 271.

UK Parliament (2021). Health and Care Bill. Available online: https://bills.parliament.uk/bills/3022/publications (last accessed 05/08/21).

Valdez, D., M. Ten Thij, K. Bathina, L. A. Rutter and J. Bollen (2020). "Social Media Insights Into US Mental Health During the COVID-19 Pandemic: Longitudinal Analysis of Twitter Data." Journal of medical Internet research **22**(12): e21418.

Verhoeven, V., G. Tsakitzidis, H. Philips and P. Van Royen (2020). "Impact of the COVID-19 pandemic on the core functions of primary care: will the cure be worse than the disease? A qualitative interview study in Flemish GPs." BMJ Open **10**(6): e039674.

Vilovic, T., J. Bozic, M. Vilovic, D. Rusic, S. Z. Furlan, M. Rada and M. Tomicic (2021). "Family physicians' standpoint and mental health assessment in the light of COVID-19 pandemic-a nationwide survey study." International Journal of Environmental Research and Public Health **18**(4): 1-17.

Wahbeh, A., T. Nasralah, M. Al-Ramahi and O. El-Gayar (2020). "Mining Physicians' Opinions on Social Media to Obtain Insights Into COVID-19: Mixed Methods Analysis." JMIR Public Health Surveill **6**(2): e19276.

Wanat, M., M. Hoste, N. Gobat, M. Anastasaki, F. Boehmer, S. Chlabicz, A. Colliers, K. Farrell, M. N. Karkana, J. Kinsman, C. Lionis, L. Marcinowicz, K. Reinhardt, I. Skoglund, P. D. Sundvall, A. Vellinga, T. Verheij, H. Goossens, C. Butler, A. van der Velden, S. Anthierens and S. Tonkin-Crine (2021). "Transformation of primary care during the COVID-19 pandemic: experiences of healthcare professionals in eight European countries." The British journal of general practice : the journal of the Royal College of General Practitioners. **11**.

Wang, Y., M. McKee, A. Torbica and D. Stuckler (2019). "Systematic Literature Review on the Spread of Health-related Misinformation on Social Media." Social Science & Medicine **240**: 112552.

Welsh Government (2020) General practice workforce. Available online at: https://gov.wales/general-practice-workforce-30-september-2020 (last accessed 06/09/21)

Wojcik S, H. A. (2019). "How Twitter Users Compare to the General Public | Pew Research Center [Internet]. 2019. Available from: https://www.pewresearch.org/internet/2019/04/24/sizing-up-twitter-users/."

Xu, Z., Y. Ye, Y. Wang, Y. Qian, J. Pan, Y. Lu and L. Fang (2020). "Primary Care Practitioners' Barriers to and Experience of COVID-19 Epidemic Control in China: a Qualitative Study." J Gen Intern Med **35**(11): 3278-3284.

Yin, Y., X. Chu, X. Han, Y. Cao, H. Di, Y. Zhang and X. Zeng (2021). "General practitioner trainees' career perspectives after COVID-19: a qualitative study in China." BMC family practice **22**(1): 18.

Zeng, X., T. Peng, X. Hao, C. Zou, K. Lin, X. Liao, S. Chen and B. Hayhoe (2021). "Psychological Distress Reported by Primary Care Physicians in China during the COVID-19 Pandemic." Psychosomatic Medicine **83**(4): 380-386.