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General practitioner wellbeing during the COVID-19 pandemic. A systematic review

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Short title: Systematic review of GP wellbeing during COVID

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Author contributions

This study was designed and conceived by LJ and KB, with methodological expertise from SG. Database searching was undertaken by SG and HE, EM, LJ and SG screened search results. EM, LJ, CH, ACA, SG and TMB contributed to data extraction and quality assessment, which LJ and CH synthesized. VD contributed statistical support. CVDFC provided topic expertise and contributed to the manuscript preparation. LJ wrote the first draft of this manuscript, to which all authors commented. All authors have read and agreed the final version.

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Competing interests

None declared.

Availability of data and other materials

Materials and data used for the conduct of this research are available from the study authors on request.

Abstract (243 words)

Background

Doctors' organisations in the UK have reported worrying levels of work-related stress and burnout in the general practitioner (GP) workforce for some time, and the COVID-19 pandemic has presented clear new challenges.

Aims

To synthesise international evidence exploring the impact of COVID-19 on primary care doctors' mental health and wellbeing and identify risk factors associated with their psychological wellbeing during this time.

Design and setting

Mixed-methods systematic review.

Method

We searched six bibliographic databases, Google Scholar and MedRxiv and conducted reference checking to identify studies of GP psychological wellbeing during the pandemic. Two reviewers selected studies, extracted data and assessed the quality of studies using standardised tools. Heterogeneity in outcomes, setting and design prohibited statistical pooling; we combined the studies using a convergent integrated thematic synthesis.

Results

Thirty-one studies were included. Multiple sources of stress were identified, including changed working practices, risk, exposure and inadequate PPE, information overload, pandemic preparedness and cohesion across sectors. Studies demonstrated an impact on psychological wellbeing, with some GPs experiencing stress, burnout, anxiety, depression, fear of COVID, lower job satisfaction and physical symptoms. Studies described gender and age differences: women report poorer psychological outcomes across all domains and older GPs reported greater stress and burnout. Use of outcome measures and reporting practice varied greatly.

Conclusion

Our review of international evidence demonstrates that the COVID-19 pandemic has adversely affected GPs' wellbeing around the world. Further research could explore gender and age differences, identifying interventions targeted to these groups.

Keywords: General practice, General practitioners, Wellbeing, Mental health, COVID-19, coronavirus

How this fits in

Many GPs have reported stress and burnout over recent years, which is potentially damaging not just to doctors themselves, but also to patients and healthcare systems. The coronavirus pandemic has presented new challenges and there is a need to evaluate the impact on GP wellbeing. This review synthesises the international evidence base exploring primary care doctors' psychological wellbeing during the pandemic. Studies have highlighted multiple sources of stress during this time and reported experiences of stress, burnout, anxiety, depression, fear of COVID, reduced job satisfaction and physical symptoms. Gender and

age differences may warrant further research to identify interventions targeted to the needs of specific groups.

Background

Doctor burnout has been described as a “global crisis”¹ affecting the quality of patient care²⁻⁴ and sustainability of health care systems.⁵ International literature highlights growing problems with chronic stress and burnout that threatened the mental health of doctors working in primary care settings before the COVID-19 pandemic.⁶⁻¹² In the UK, 37% of GPs surveyed in 2019 reported an intention to leave direct patient care¹³ and researchers have estimated a shortage of 2,500 GPs projected to increase to 7,000 within five years if current trends continued.¹⁴

The COVID-19 pandemic has presented additional challenges for primary care doctors around the world, including rapid change, risks of infection, remote working, pent-up demand, reductions in face-to-face patient care and vaccination delivery. Research from earlier epidemics and emerging during the COVID-19 pandemic demonstrates a negative impact on clinician psychological wellbeing.¹⁵⁻¹⁹ Increased use of mental health support services during the pandemic has been reported at 40% and 60% by the British Medical Association (BMA) and NHS Practitioner Health service respectively (across UK health professional groups).²⁰

While there has been a tendency for research to focus on hospital roles,²¹ there is now a need to synthesise evidence and explore factors associated with primary care doctors’ mental health and wellbeing during the pandemic.

Methods

We followed the Cochrane guidance for conducting systematic reviews²² and registered and published a protocol (PROSPERO ID: CRD42020225680).²³ We used the PRISMA checklist²⁴ to ensure the transparency of reporting.

Search strategy

We searched six bibliographic databases (MEDLINE, Embase, PsychINFO, Science Citation Index (SCI) and Social Science Citation Index (SSCI) and Emerging Sources) 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 health research (see Supplementary Box 1 for full searches). 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, in order to capture studies measuring outcomes during the pandemic. We searched reference lists of included studies. Our initial search was on 19th November 2020; we updated this on 3rd June 2021.

Inclusion criteria

We included studies in any country examining the impact of the COVID-19 pandemic on measures of primary care doctors' psychological wellbeing, stress and burnout, with absenteeism and markers of workforce retention as secondary outcomes. We excluded studies solely exploring doctors' infection rates. We used international variations in terminology, for example, 'doctors working in general practice/family practice/primary care'. For simplicity in this paper we refer to all as 'GPs'. We excluded non-English language studies and those including multiple health professional groups that did not present the results for GPs separately. We did not limit by study design in this mixed-methods systematic review, but only included empirical research; editorials and purely descriptive articles were excluded. Studies rated as high risk of bias were excluded from the synthesis (see Quality Assessment).

Selection of studies

We entered the results of each search into an Endnote Library and removed duplicates. Two independent reviewers screened resulting records using titles and abstracts. Two of four 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).

Data extraction

One of three reviewers (EM, CH and LJ) extracted data using a pre-piloted data extraction form, cross-checking a 20% sample to ensure consistency. We extracted information regarding study design, sample size, sample characteristics, primary and secondary outcomes.

Quality assessment

We assessed the quality of identified reviews using the Joanna Briggs Institute (JBI) Checklist for Analytical Cross Sectional Studies²⁵ and the Critical Appraisal Skills Programme (CASP) quality checklist²⁶ for observational and qualitative studies. Two researchers (ACA, TMB, EM, VD or LJ) independently quality assessed included studies, with disagreements resolved by a third reviewer (LJ). Studies were excluded if four or more categories were rated as inadequate on the JBI tool²⁵ or if qualitative studies were rated as being 'invaluable' using the CASP tool²⁶ due to significant issues in the design and conduct of the study.

Data synthesis

Pooled analysis (random effects) was used to summarise age and gender data across studies. Where age groups were reported, we estimated the average age using the midpoint and frequency of the age groups. Data did not meet the requirements for statistical pooling of outcomes due to heterogeneity in outcome measures, study designs and healthcare settings.

Since this mixed methods systematic review included both quantitative and qualitative study designs covering broadly similar topics, we undertook a convergent integrated approach based on the JBI guidance for mixed methods systematic reviews.²⁷ This involved a form of narrative synthesis whereby quantitative data are described alongside qualitative findings under common themes or categories.²⁷ We used NVivo software to manage and sort the data (NVivo 12, QSR International Pty Ltd, 2018) following a process of thematic qualitative synthesis that moves from initial 'free coding' through to descriptive and then more

analytical themes.²⁸ This process was iterative, with codes and themes refined and developed throughout the analysis process, through consultation amongst the wider research team.

Results

Search results

2102 studies were retrieved from databases and hand searching. We removed 759 duplicates and excluded 1056 studies by screening the titles and abstracts; we screened 287 full texts and included 31 studies overall (Figure 1).

Description of studies

Characteristics of the included studies are presented in Supplementary Table 1. Studies were dispersed geographically, with the largest numbers undertaken in Italy and China (Table 1). There were 25 cross-sectional surveys, five qualitative studies and one mixed survey and qualitative study. Several validated and some non-validated measures were used to assess outcomes. Sample sizes ranged from 86 to 1040 participants (median 330) for the survey designs and 11 to 80 for the qualitative interview studies (median 14). Demographic characteristics commonly reported by studies included age and gender (Table 1), with mixed reporting of other characteristics such as years of experience (Supplementary Table 1).

Quality Assessment

The quality of included studies was generally good, see Tables 2 and 3.

Quality of cross-sectional surveys

Using the criteria outlined in the JBI tool,²⁵ sampling was well defined, as were study participants and settings in most studies (Table 2). Some studies reported age and gender inconsistently or lacked reporting of wider characteristics. Most studies used objective and validated measures, 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. While statistical analyses were appropriately conducted in all but two studies, very few studies considered confounders or used strategies to deal with these. Four studies did this²⁹⁻³² and one study partly explored confounders.³³ Inadequacies in reporting were problematic, for example the most commonly used measure was the Perceived Stress Score (PSS), measured by eight studies, but this was poorly reported at times and different versions were used.

Quality of qualitative studies

Using the CASP tool²⁶ we found all studies involving qualitative methods provided a clear statement of aims and study methodology, and the methods were deemed appropriate to address the aims of the research (Table 3). All but one study³⁴ used suitable recruitment strategies and all studies were rated as collecting data appropriately and conducting sufficiently rigorous analyses to address the research questions. No

studies described consideration for the effect of the relationship between interviewee and researcher. There was some ethical review in all studies, though for the majority there was limited discussion of the issues considered. One qualitative study³⁵ met the CASP quality criteria, but lacked clear information about which type of health professional the quotations related to (since multiple health professional groups were included). The study authors provided this information to us.

Thematic findings

Findings were grouped into two overarching categories: 1) stressors and moderators and 2) outcomes, see Figure 2 and Supplementary Table 2.

Stressors and moderators

Both qualitative and quantitative studies assessed sources of stress during the pandemic and these were grouped thematically as factors associated with the changing nature and quantity of GP work, risk and exposure, information seeking and use, organisational and national preparedness and interdisciplinary communication. Support was seen as a moderator of stress. Further descriptions can be found in Table 4.

Psychological wellbeing

Reporting and measurement of psychological outcomes varied across studies, making comparisons across settings difficult.

Studies measuring stress placed GPs, on average, into 'borderline' or 'stressed' categories of the perceived stress scale (PSS)^{30, 36-39} and, using other stress scales, moderate to severe stress was reported in between 9.5% of GPs in Oman⁴⁰ and 24.7% of GPs in Portugal.⁴¹ In terms of burnout, studies found the greatest difficulties related to emotional exhaustion, with 24.5% to 46.1% of GPs reporting high burnout symptoms relating to the emotional exhaustion components of the scale.^{36, 42}

Rates of anxiety ranged from 20% in Indonesia⁴³ to 95% in Turkey and Colombia.^{44, 45} Symptoms of depression were reported to a lesser extent, and ranged from 13% in Indonesia⁴³ to 37% in Italy.⁴⁶ Post-traumatic stress symptoms (PTSS) were reported in 10.6% of GPs in France,³⁶ moderate to severe symptoms were reported in 45.2% of GPs in Croatia³⁶ and 32% of GPs in Italy presented with significant PTSS.⁴⁶

Occupational groups

Among four studies of mixed groups of healthcare workers (HCWs), primary care doctors reported higher levels of personal perceived stress,^{37, 38} worse burnout scores (relating to lower 'compassion satisfaction' and higher 'compassion fatigue'),³⁸ worse depression scores,³⁹ greater reporting of PTSS³² and lower job satisfaction than other specialty groups.²⁹

Gender

Seven studies report statistically significant differences in outcomes for women GPs, including higher stress levels,^{30, 36, 38, 39, 47} greater reporting of burden and burnout,^{36, 41, 47} greater reporting of anxiety⁴⁸ and higher mean PTSS scores.³⁶

Age

Older age was associated with higher stress levels in three studies,^{39, 49, 50} but in Colombian GPs, younger age predicted anxiety⁴⁸ and in Portugal greater levels of depression were reported in GPs under 40.⁴¹ In this study, increased length of time working as a doctor predicted higher burnout on items of the burnout scale relating to patient interactions.⁴¹

Other outcomes

Four studies explored future intentions, reporting wide variations in plans to leave medicine, which were associated with general anxiety, particularly around infection risk.^{30, 31, 48, 51} Two studies report that 7% of GPs considered leaving practice,^{30, 31} while another⁴⁸ found that these intentions were associated with anxiety around protecting family members.

Ten studies explored physical symptoms - GPs reported migraines and headaches, tiredness and exhaustion, sleep disorders^{45, 50} and increased eating, drinking and smoking.^{44, 48, 51} More severe insomnia was associated with depressive symptoms in Italian GPs.⁵²

UK GPs with symptoms of long COVID felt 'let down' and expressed frustration at the lack of support and recognition for the condition.⁵³

Discussion

Summary

The COVID-19 pandemic has necessitated substantial changes in primary care around the world; GPs rapidly changed working practices and managed evolving guidelines amidst uncertainty and personal risk. Our review of international literature highlights the difficulties that GPs have experienced across healthcare settings during the pandemic and shows high levels of work-related stress and burnout.^{30, 32, 33, 36-42, 47, 55} Rates of anxiety and depression varied considerably across international settings, as did the use of tools to measure such outcomes. Studies also lack longitudinal or 'pre-pandemic' comparators, which makes drawing firm conclusions regarding the impact of COVID-19 difficult.

Studies found gender differences, with women GPs reporting worse outcomes on all facets of psychological wellbeing.^{30, 36, 38, 39, 41, 47, 48} Similar findings have been reported in other physician groups in China⁶² and greater job strain has been reported amongst women doctors in dual-doctor marriages during the pandemic.⁶³ Experiences according to age varied across studies, with higher stress reported in older groups but more anxiety and depression in younger groups.

Studies included in our review show that many GPs considered leaving medicine, both to protect family members from risk of infection and because of the effects on their psychological wellbeing. Understanding the key sources of stress for GPs could enable an evidence-based approach to the development of future policy as the pandemic progresses, which may help to protect the future wellbeing of the workforce.

Strengths and limitations

This is the first systematic review exploring GPs' psychological wellbeing during the COVID-19 pandemic. We used a rigorous methodology, and the combination of qualitative and quantitative literature generates an in-depth understanding of stressors and outcomes. Issues faced during the first year of the pandemic may be over-represented due to time-lags in publishing studies; further research may be needed to explore later experiences. There are limitations to these findings relating to their context, for example we excluded non-English language studies. Policymakers may wish to consider the strength of evidence from their particular settings, with potential need for further research reflecting variations in government and population responses to the pandemic, infection rates and healthcare systems. For example, further research is needed from the USA, India and Brazil, which have had the highest absolute numbers of confirmed COVID-19 deaths.⁶⁵ Just two studies exist from the USA,^{34, 57} both focused only on the uptake of telemedicine during the pandemic. While three studies included UK GPs, these were limited to one geographical area,⁵⁵ focused on GP's experiences of long-COVID,⁵³ or formed part of international evidence from different settings.⁵⁶ Further UK evidence is needed.

While quality of the evidence was generally good, there were some limitations in consideration of confounders and in reporting across studies, with results pertaining to GPs often not disentangled from other HCWs, limiting the pool of research. Furthermore, most studies used cross-sectional survey designs, so there may be selection bias in types of GPs responding. The lack of longitudinal cohort designs limits the ability to assess the impact of the pandemic, and one study relied on participants' retrospective judgement, which may be flawed due to potential recall bias. There is a need to standardise tools across studies, particularly around workplace stress and burnout.

Implications for research and practice

COVID-19 has presented many challenges and created additional pressures for the GP workforce. While GP mental health and wellbeing has been the focus of a growing international debate, our review is the first evidence synthesis on this topic. This provides an international overview of the sources of stress and psychological outcomes, and highlights the need for policy and practice to support GPs.

Gender and age differences are noteworthy and may warrant further exploration. While women may be more open in discussing difficulties and seeking support due to socialised gender norms,⁶⁴ women may also have experienced greater pressures during the pandemic due to wider caring responsibilities.⁶³ Increasing stress with age may result from seniority and additional roles including practice management. Policy makers and researchers may wish to consider these gender and age differences in order to design tailored interventions. Despite the increased risk of COVID-19 amongst racially minoritised groups,⁶⁶ we found a lack of evidence exploring the impact of ethnicity on measures of psychological wellbeing.

Our review of international evidence demonstrates that the COVID-19 pandemic has adversely affected GPs' wellbeing around the world. Policy and infrastructure are needed to support GPs during this challenging time.

Figure 1: Flow diagram for included studies

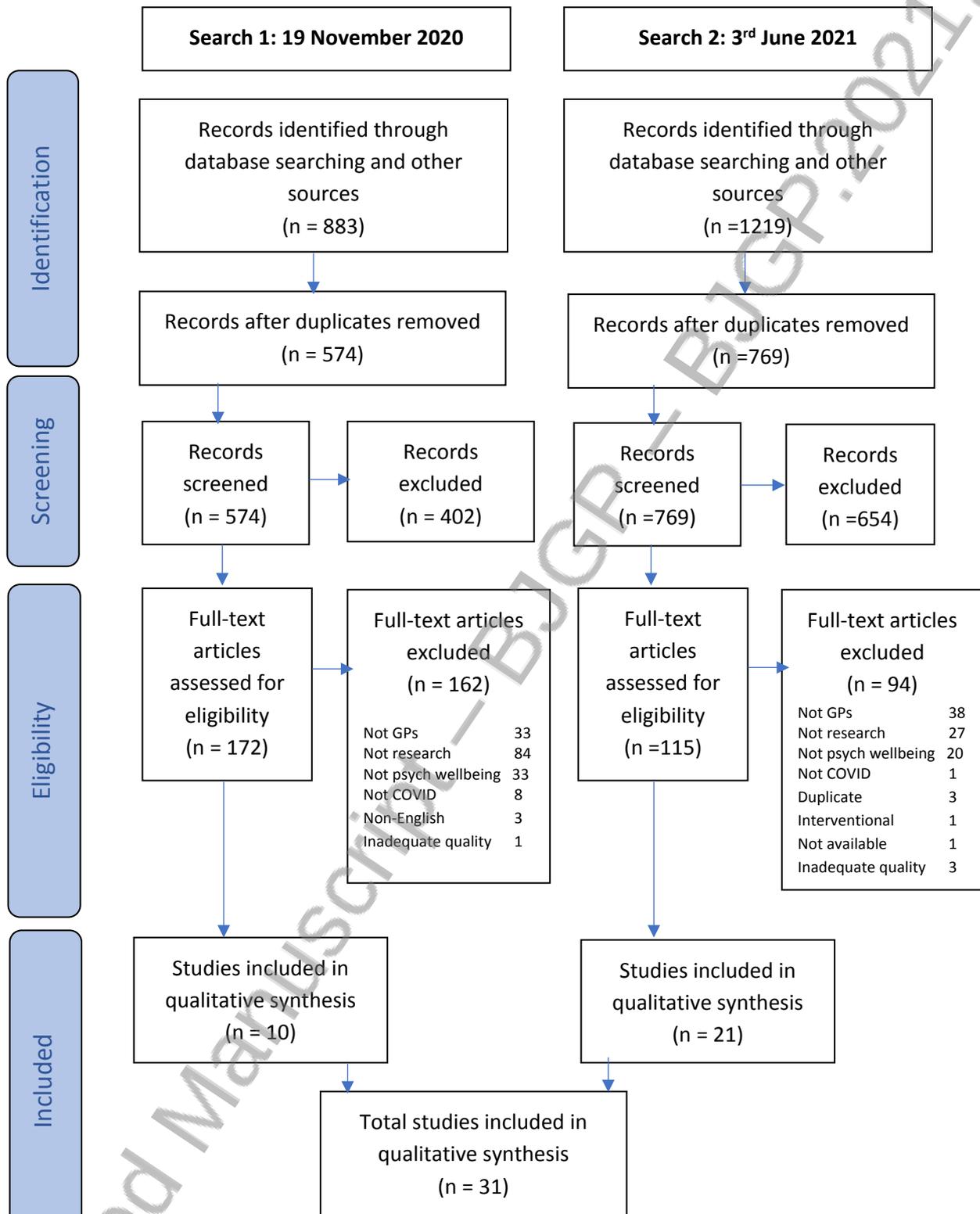
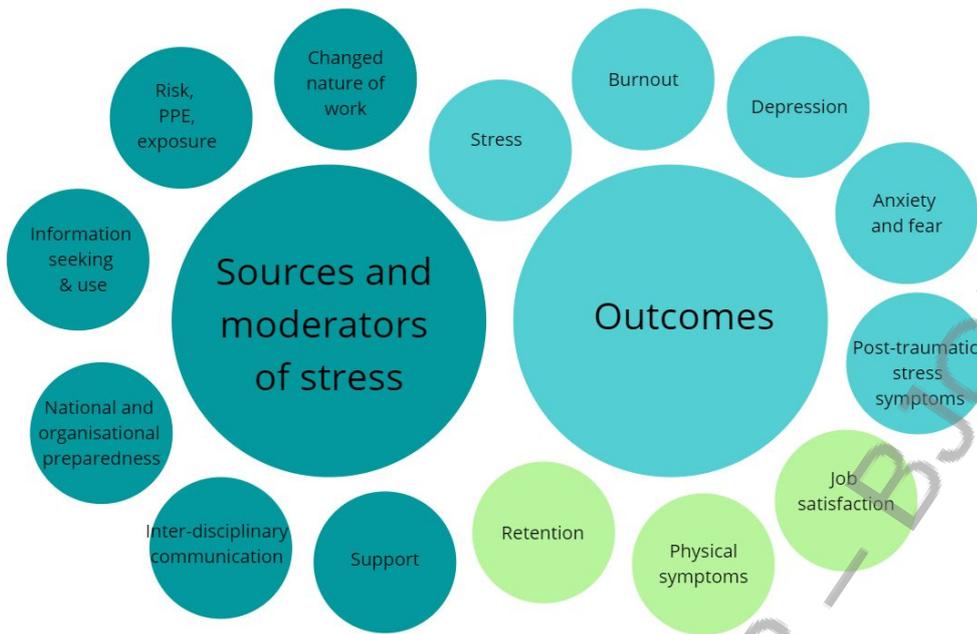


Figure 2: stressors, moderators and outcomes relating to GP wellbeing during COVID



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Table 1: Summary characteristics of studies

| | |
|------------------------------------|--|
| Location of study | Italy (4), China (4), Singapore (3), France (2), Colombia (2), UK (2), USA (2), Australia (1), Croatia (1), Indonesia (1), Jordan (1), Oman (1), Portugal (1), Romania (1), Saudi Arabia (1), Spain (1), Turkey (1) multiple countries (2) |
| Demographic characteristics | |
| <i>Age</i> | Range 26-55, mean* 42.4 years 95% CI (39.6, 45.2) |
| <i>Gender</i> | Proportion males: 15% to 100%, overall percentage males: 41.3% (95% CI 34.6 - 48.5). |

*based on 23 studies reporting sufficient information

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Table 2: Quality Appraisal of cross-sectional surveys using the JBI tool (23). 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 |
| 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 |
| 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 |
| 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 (24)

| 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 |
| 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 |

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