

IMPACT OF COVID-19 PANDEMIC ON GENERAL PRACTICES: RAPID REVIEW SUPPLEMENT

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■ APPENDIX REPORT

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1. APPENDIX 1 – DATABASE SEARCH STRINGS

1.1. Search in PUBMED

Search date	Search strings	Number of hits
02/08/2022	On mesh terms: "General Practice"[Mesh] OR "General Practitioners"[Mesh] OR "Primary Health Care"[Mesh] OR "Physicians, Primary Care"[Mesh]) AND ("Workforce"[Mesh] OR "Health Workforce"[Mesh]) AND ("COVID-19"[Mesh] OR "SARS-CoV-2"[Mesh]) AND ("Forecasting"[Mesh] OR "trends" [Subheading]	→ 7 hits
09/08/2022	"COVID-19"[Supplementary Concept] OR "COVID-19"[tiab] OR COVID19[tiab] OR "COVID 19"[tiab] OR "SARS-CoV-2"[tiab] OR "2019-nCoV"[tiab] OR "Novel coronavirus"[tiab] OR "Coronavirus2019"[tiab] OR "Coronavirus 19"[tiab] OR "COVID2019"[tiab] OR "2019 ncov"[tiab] OR "Wuhan coronavirus"[tiab]) AND (Pandemic*[tiab] OR Outbreak*[tiab]) AND (Impact*[tiab] OR Forecasting[tiab] OR trends[tiab] OR future[tiab]) AND ("General Practice"[tiab] OR "General Practitioner*"[tiab] OR "Primary Health Care"[tiab] OR "Primary care"[tiab] OR "Family medicine"[tiab] OR "Family practitioner*"[tiab]) AND (Workforce[tiab] OR "Health resource"[tiab] OR workload[tiab] OR quota[tiab])	→ 137806 → 49648 → 1116 → 88 hits

1.2. Search in EMBASE

Search date	Search strings	Number of hits
08/08/2022	('covid-19' OR covid19 OR 'covid 19' OR 'sars-cov-2' OR '2019-ncov' OR 'novel coronavirus' OR 'coronavirus2019' OR 'coronavirus 19' OR 'covid2019' OR '2019 ncov' OR 'wuhan coronavirus') AND (pandemic* OR outbreak*) AND (impact* OR forecasting OR trends OR future) AND ('general practice' OR 'general practitioner*' OR 'primary health care' OR 'primary care' OR 'family medicine' OR 'family practitioner*') AND (workforce OR 'health resource' OR 'workload' OR 'quota')	→ 203 hits



2. APPENDIX 2 – SELECTION RESULTS

2.1. Publications identified in PUBMED

References	Inclusion or Exclusion	Conclusion and Comments
1: Vanhaecht K, Seys D, Bruyneel L, Cox B, Kaesemans G, Cloet M, Van Den Broeck K, Cools O, De Witte A, Lowet K, Hellings J, Bilsen J, Lemmens G, Claes S. COVID-19 is having a destructive impact on health-care workers' mental well-being. <i>Int J Qual Health Care</i>. 2021 Feb 20;33(1):mzaa158. doi:10.1093/intqhc/mzaa158. PMID: 33270881; PMCID: PMC7799030.	Inclusion? Inclusion based on full text	Cross-sectional survey study, conducted between 2 April and 4 May 2020 (two waves); 4509 health-care workers in Flanders (Belgium), Not really on GPs quota but Belgian impact and advices for decision-makers
2: De Kock JH, Latham HA, Leslie SJ, Grindle M, Munoz SA, Ellis L, Polson R, O'Malley CM. A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being. <i>BMC Public Health</i>. 2021 Jan 9;21(1):104. doi: 10.1186/s12889-020-10070-3. PMID:33422039; PMCID: PMC7794640.	Exclusion for scope and population: No focus on GPs, no quota	Rapid review of the literature across 14 databases. Majority of results from China (18 out of 24 included studies) and most sampled urban hospital staff. Conclusions: The evidence to date suggests that female nurses with close contact with COVID-19 patients may have the most to gain from efforts aimed at supporting psychological well-being. ! Also inconsistencies in findings
3: Alrawashdeh HM, Al-Tammemi AB, Alzawahreh MK, Al-Tamimi A, Elkholy M, Al Sarireh F, Abusamak M, Elehamer NMK, Malkawi A, Al-Dolat W, Abu-Ismael L, Al-Far A, Ghoul I. Occupational burnout and job satisfaction among physicians in times of COVID-19 crisis: a convergent parallel mixed-method study. <i>BMC Public Health</i>. 2021 Apr 28;21(1):811. doi: 10.1186/s12889-021-10897-4. PMID: 33906619; PMCID: PMC8079229.	Exclusion for scope and population: no focus on GPs, no quota	Mixed-method study :structured web-based questionnaire (10-Item Burnout Measure-Short version (BMS), and 5-Item Short Index of Job Satisfaction (SIJS)) and semi-structured individual interviews. 973 survey responses and 11 interviews among physicians in Jordania Conclusions: Reliable efforts should be implemented aiming at protecting physicians' physical and mental wellbeing, enhancing their working conditions, and raising awareness about burnout. Evidence-based decisions and proper utilization of financial and human resources at institutional and national levels are believed to be crucial for the sustainability of the health workforce, especially in crises.



References	Inclusion or Exclusion	Conclusion and Comments
4: Filippi MK, Callen E, Wade A, Coffman M, Westfall JM, Jabbarpour Y, Hester CM, Carroll J. COVID-19's Financial Impact on Primary Care Clinicians and Practices. J Am Board Fam Med. 2021 May-Jun;34(3):489-497. doi: 10.3122/jabfm.2021.03.200502. PMID: 34088809.	Exclusion for scope: focus on financial impact only Severe declines in patient visits, causing drastic revenue reductions, greatly impacted the ability to serve patients.	Weekly surveys from March 27, 2020, through June 15, 2020, to a network of more than 1960 US physicians. 461 respondents to the financial impact question over the 12 weeks. Conclusions. Alternate payment models could provide some financial stability and address business viability. Primary care clinicians and practices experienced significant changes in several areas about financial implications: patient visits, financial strain, staffing and telehealth.
5: Gray R, Sanders C. A reflection on the impact of COVID-19 on primary care in the United Kingdom. J Interprof Care. 2020 Sep-Oct;34(5):672-678. doi: 10.1080/13561820.2020.1823948. Epub 2020 Sep 22. PMID: 32962462.	Inclusion? Inclusion based on full text	Discussion paper based on the experience of one of the authors working as a general practitioner/family doctor during the pandemic in UK. Conclusion: implications for future working and a series of recommendations for primary care relating to the importance of supporting the workforce, remote consultations and communication, regular team meetings, and development of integrated care. It is suggested that many of the challenges highlighted can be addressed by placing a greater emphasis on the use of interprofessional education (IPE) to underpin and support effective collaborative working.
6: Behera D, Praveen D, Behera MR. Protecting Indian health workforce during the COVID-19 pandemic. J Family Med Prim Care. 2020 Sep 30;9(9):4541-4546. doi: 10.4103/jfmpc.jfmpc_925_20. PMID: 33209760; PMCID: PMC7652162.	Exclusion for context (India situation), scope (Infection control), early pandemic period.	Literature review on PubMed and Google Scholar databases using "COVID-19", "Infection Control", "Health worker", "India" and on websites of Government of India, relevant UN agencies and leading news agencies. Conclusions: India must take timely measures in rapid manufacturing and procurement of essential personal protective equipment (PPE).
7: Campbell C, Sommerfield T, Clark GRC, Porteous L, Milne AM, Millar R, Syme T, Thomson CS. COVID-19 and cancer screening in Scotland: A national and coordinated approach to minimising harm. Prev Med. 2021 Oct;151:106606. doi: 10.1016/j.ypmed.2021.106606. Epub 2021 Jun 30. PMID: 34217418; PMCID:PMC8241681.	Exclusion for population and scope: no focus on GPs but on cancer screening	Description of the integrated approach to managing the impact of the pandemic on cancer screening programmes in Scotland throughout 2020 Conclusions: Emerging from the pandemic, there is recognition of the need and the opportunity to transform and renew both cancer and screening services in Scotland, and in particular to address long-standing workforce capacity problems through innovation and investment, and to continue to prioritise addressing health inequalities.



References	Inclusion or Exclusion	Conclusion and Comments
8: Miller R, Glasby J, Dickinson H. Integrated Health and Social Care in England: Ten Years On. <i>Int J Integr Care</i> . 2021 Oct 29;21(4):6. doi: 10.5334/ijic.5666. PMID: 34754282; PMCID: PMC8555479.	Inclusion? Exclusion based on full text for scope (integrated care by itself and UK history of policies made)	Overview and critical commentary on integrated care policy in England from 2010-2020 based on reviews by regulators, parliamentary committees and the national audit office. Conclusion: <u>Integrated care cannot by itself address major inadequacies in the underlying resources and structural inequalities.</u>
9: Deng D, Naslund JA. Psychological Impact of COVID-19 Pandemic on Frontline Health Workers in Low- and Middle-Income Countries. <i>Harv Public Health Rev (Camb)</i> . 2020 Fall;28:http://harvardpublichealthreview.org/wp-content/uploads/2020/10/Deng-and-Naslund-2020-28.pdf. PMID: 33409499; PMCID: PMC7785092.	Exclusion: poor design; context very different from Belgium	Narrative review, focusing on psychological impact of the pandemic and the critical need to consider the wellbeing of frontline health workers in low and middle-income.
10: Anderson M, O'Neill C, Macleod Clark J, Street A, Woods M, Johnston-Webber C, Charlesworth A, Whyte M, Foster M, Majeed A, Pitchforth E, Mossialos E, Asaria M, McGuire A. Securing a sustainable and fit-for-purpose UK health and care workforce. <i>Lancet</i> . 2021 May 22;397(10288):1992-2011. doi: 10.1016/S0140-6736(21)00231-2. Epub 2021 May 6. PMID: 33965066.	Inclusion? Inclusion based on full text	UK Health policy paper Quoted by 10 publication. Two appear to be verified: <u>Parkinson et al.</u> and <u>Mc kensie et al.</u>
<i>Parkinson A, Matenge S, Desborough J, Hall Dykgraaf S, Ball L, Wright M, Sturgiss EA, Kidd M.</i> <i>The impact of COVID-19 on chronic disease management in primary care: lessons for Australia from the international experience</i> <i>Med J Aust</i> . 2022 May 16;216(9):445-448. doi: 10.5694/mja2.51497. Epub 2022 Apr 10. PMID: 35403236	No abstract Inclusion based on full text: Review of COVID-19 experiences from several countries (including Belgium) and list of lessons learned.	<u>Quoted Danhieux et al. from Belgium</u>
<i>Danhieux K. et al. quoted by Van den Bulck S. et al.</i> <i>The impact of COVID-19 on chronic care according to providers: a qualitative study among primary care practices in Belgium.</i> <i>BMC Fam Pract</i> . 2020;21(1):255.	Inclusion? Inclusion based on full text	21 semi-structured video interviews (doctors, nurses, dieticians) in Belgium.



References	Inclusion or Exclusion	Conclusion and Comments
MacKenzie A, MacQuarrie C, Murphy M, Piers G, Philopoulos K, Carrigan S, Joice J, Kapra J, Casault CA, MacDougall J, Langley JM, Tomblin Murphy G. Operationalizing integrated needs-based workforce planning at Nova Scotia Health in response to the COVID-19 pandemic. Healthc Manage Forum. 2022 Jul;35(4):222-230. doi: 10.1177/08404704221093982. PMID: 35748087	Inclusion? Focus on integrated care in Nova Scotia US Exclusion based on full text for population: no focus on primary care but on inpatients and ICU staff during the COVID pandemics	<u>Quoted Simkin et al.</u> <u>Quoted also a SR: Asamani et al.</u>
Simkin S, Chamberland-Rowe C, Bourgeault IL. An integrated primary care workforce planning toolkit at the regional level (part 2): quantitative tools compiled for decision-makers in Toronto, Canada. <i>Human Res Health</i>. 2021;19:86.	Inclusion? Exclusion based on full text for scope (modeling with data sources from Toronto; no consideration about COVID impact)	The objective of health workforce planning is not to predict the future, but instead to allow policy-makers to understand how various factors interact to influence the population need for healthcare services and the ability of the workforce to meet this need. Fit-for-purpose toolkit—including a quantitative model—to support integrated, multi-professional, needs based primary care workforce planning. <u>Quoted Chamberland-Rowe et al.</u>
Asamani J.A., Christmals CD, Reitsma GM. The needs-based health workforce planning method: a systematic scoping review of analytical applications. <i>Health Policy Planning</i>. 2021;36(8):1325-1343.	Inclusion? Exclusion based on full text for scope (not on the COVID, not on primary care)	SR Google scholar, Pubmed; Scopus, Web of Science, EBSCOHost; August 2020; QA 25 papers included; Increasing uptake of the needs-based health workforce modelling, with 84% of the studies published within the last decade (2010–20). Three countries (Canada, Australia and England) accounted for 48% of the publications included whilst four studies (16%) were based on LMIC. 20% focused on the health system need for particular categories of health workers.
Asamani J. A. et al. Advancing the Population Needs-Based Health Workforce Planning Methodology: A Simulation Tool for Country Application. <i>Int J Environ Res public Health</i> 2021;18(4)	Inclusion? Exclusion based on full text for scope (math model)	Advanced empirical framework for the need-based approach to health workforce planning with an open-access simulation tool in Microsoft((R)) Excel to facilitate real-life health workforce planning in countries. Two fundamental mathematical models are used to quantify the supply of, and need for, health professionals, respectively. The supply-side model is based on a stock-and-flow process, and the need-side model extends a previously published analytical frameworks using the population health needs-based approach Example utilization model in Ghana



References	Inclusion or Exclusion	Conclusion and Comments
<i>Chamberland-Rowe C, Simkin S, Bourgeault IL. An integrated primary care workforce planning toolkit at the regional level (part 1): qualitative tools compiled for decision-makers in Toronto, Canada. Hum Resour Health. https://doi.org/10.1186/s12960-021-00610-2.</i>	<i>Inclusion? Co-development of an evidence-informed, fit-for-purpose, toolkit-based approach to primary care health workforce planning, Canada</i> <i>Exclusion based on full text for scope: Search before the pandemic (1997-2017); theoretical conception of modeling.</i>	<i>Targeted review of leading practices in health workforce planning (PubMed, Web of Science, and SCOPUS) and presents the qualitative health workforce planning tools and processes included in the toolkit</i> <i>Four phases of the planning cycle—including horizon scanning, scenario generation, workforce modelling, and policy analysis</i>
11: Mobula LM, Heller DJ, Commodore-Mensah Y, Walker Harris V, Cooper LA. Protecting the vulnerable during COVID-19: Treating and preventing chronic disease disparities. <i>Gates Open Res.</i> 2020 Sep 9;4:125. doi: 10.12688/gatesopenres.13181.1. PMID: 33117965; PMCID: PMC7578408.	Exclusion for scope: focus on chronic disease management during the pandemic.	Description of six US key policy interventions - task shifting, workforce protection, telehealth and mobile services, insurance restructuring and increased funding for NCDs, prescription policies for NCDs and community partnerships Conclusions: Long-term integration of the 6 key care models post-COVID-19 may prevent care shocks during future pandemics, bolstering emerging universal primary care models
12: Dahn B, Kerr L, Nuthulaganti T, Massaquoi M, Subah M, Yaman A, Plyler CM, Cancedda C, Marshall RE, Marsh RH. Liberia's First Health Workforce Program Strategy: Reflections and Lessons Learned. <i>Ann Glob Health.</i> 2021 Oct 8;87(1):95. doi: 10.5334/aogh.3242. PMID: 34707975; PMCID: PMC8499710.	Inclusion? Exclusion based on full text: Context very different from Belgium (civil war and the Ebola epidemic, huge shortage of Liberia's health workforce, lack of training of good quality); description of institutional strategies; no focus on GPs.	Liberia Health Workforce Program (HWP) Strategy 2015-2021. With the goal of building a resilient and responsive health system to ensure access to essential services and the ability to respond to future crises, this strategy aimed to add 6,000 new professionals to the workforce. In the context of the COVID-19 pandemic, the authors share lessons learned from the program's development and first years of implementation.
13: Amos OA, Adebisi YA, Bamisaiye A, Olayemi AH, Ilesanmi EB, Micheal AI, Ekpenyong A, Lucero-Prisno DE 3rd. COVID-19 and progress towards achieving universal health coverage in Africa: A case of Nigeria. <i>Int J Health Plann Manage.</i> 2021 Sep;36(5):1417-1422. doi: 10.1002/hpm.3263. Epub 2021 Jun 23. PMID: 34161625; PMCID: PMC8426814.	Exclusion: Context very different from Belgium	Nigeria commitment for UHC. The pandemic has highlighted the importance of essential health services and the need to strengthen primary healthcare system. It is, therefore, important that stakeholders in Nigeria and other African countries carry out situation analysis of the current health systems towards achieving UHC2030.



References	Inclusion or Exclusion	Conclusion and Comments
14: Fernández-Aguilar C, Casado-Aranda LA, Farrés Fernández M, Minué Lorenzo S. Has COVID-19 changed the workload for primary care physicians? The case of Spain. <i>Fam Pract</i> . 2021 Nov 24;38(6):780-785. doi: 10.1093/fampra/cmab028. PMID: 34545396; PMCID: PMC8499994.	Inclusion	Subjective measurement procedure through the NASA-TLX questionnaire, with a total of 102 records from 16 doctors from a Primary Health Centers of the Granada-Metropolitan Health district (Andalusia, Spain). Conclusions: Work overload and the emotional state of health workers is one of the many repercussions of the COVID-19 pandemic.
15: Adja KYC, Golinelli D. What services should be guaranteed in universal health-care systems? <i>J Prim Health Care</i> . 2020 Sep;12(3):193-194. doi:10.1071/HC20084. PMID: 32988439.	Inclusion ? Exclusion based on full-text: 2 reflection pages of 2 students in epidemiology on the health care in general.	To conclude, in preparation for the challenges ahead for health-care services, whether related to pandemics or climate change, we must see investments in new models of care and in health-related workforce. For example, governments should foster the development of health-care professionals able to work in multidisciplinary and multi-professional teams supported by digital technology and proactively engage in preventive care, as recently suggested by the OECD.
16: Halcomb E, Williams A, Ashley C, McInnes S, Stephen C, Calma K, James S. The support needs of Australian primary health care nurses during the COVID-19 pandemic. <i>J Nurs Manag</i> . 2020 Oct;28(7):1553-1560. doi: 10.1111/jonm.13108. Epub 2020 Sep 1. PMID: 32713047.	Exclusion for population no focus on GPs but on nurses, very early period of the pandemic.	Online survey via social media and professional organisations in April 2020 among 637 Australian primary care nurses. Conclusions: A number of key issues relating to personal health and safety, care quality and job security need to be addressed to support primary health care nurses during the COVID-19 pandemic.
17: Mira JJ, Carrillo I, Guilabert M, Mula A, Martin-Delgado J, Pérez-Jover MV, Vicente MA, Fernández C; SARS-CoV-2 Second Victim Study Group. Acute stress of the healthcare workforce during the COVID-19 pandemic evolution: a cross-sectional study in Spain. <i>BMJ Open</i> . 2020 Nov 6;10(11):e042555. doi: 10.1136/bmjopen-2020-042555. PMID: 33158839; PMCID: PMC7650075.	Inclusion? Exclusion based on full text for population : no focus on GPs but on stress in all kind of HCW (with only 8% in primary care and without subgroup analysis) during the early period of the pandemic.	Cross-sectional study for stress measurement (Acute Stress of Health Professionals Caring COVID-19 Scale (EASE)) among a non-randomised sample of 685 professionals (physicians, nurses and other health staff) from primary care and hospitals in Spain. Conclusions: The pandemic has affected the mental health of a significant proportion of health professionals which may reduce their resilience in the face of future waves of COVID-19.
18: Al Ghafri T, Al Ajmi F, Al Balushi L, Kurup PM, Al Ghamari A, Al Balushi Z, Al Fahdi F, Al Lawati H, Al Hashmi S, Al Manji A, Al Sharji A. Responses to the Pandemic COVID-19 in Primary Health Care in Oman: Muscat Experience. <i>Oman Med J</i> . 2021 Jan 24;36(1):e216. doi: 10.5001/omj.2020.70. PMID: 33537154; PMCID: PMC7829858.	Exclusion: no focus on GPs, context very different from Belgium, early period on the pandemic.	Descriptive study showing the trends of the confirmed positive cases of COVID-19 and the undertaken responses to the evolving epidemiological scenario in Oman. Conclusions: Facilities in the Muscat governorate, with the support from national teams, seemed to continuously scale-up their preparedness and responses to meet the epidemiological expectations in the management of COVID-19.



References	Inclusion or Exclusion	Conclusion and Comments
19: Chow C, Goh SK, Tan CSG, Wu HK, Shahdarpuri R. Enhancing frontline workforce volunteerism through exploration of motivations and impact during the COVID-19 pandemic. <i>Int J Disaster Risk Reduct.</i> 2021 Dec;66:102605. doi: 10.1016/j.ijdr.2021.102605. Epub 2021 Sep 25. PMID: 34603950; PMCID: PMC8463104.	Exclusion: no focus on GPs, context very different from Belgium.	Semi-structured individual interviews among 35 healthcare staff from medical, nursing, allied health, and administrative backgrounds, who participated in COVID-19 community-based operations in migrant worker dormitories and swab isolation facilities in Singapore. Conclusions: Healthcare organizations should consider volunteer functions in matching individual motivations to volunteer opportunities.
20: Matthewman S, Spencer S, Laverne MR, McCracken RK, Hedden L. An Environmental Scan of Virtual "Walk-In" Clinics in Canada: Comparative Study. <i>J Med Internet Res.</i> 2021 Jun 11;23(6):e27259. doi: 10.2196/27259. PMID: 34114963; PMCID: PMC8235276.	Exclusion for scope: focus on virtual clinics	Structured Google search to identify Canadian relevant virtual walk-in clinics and describe the payment model, region of operation, services offered, and continuity of care. Results: 18 virtual walk-in clinics.
21: Taggar J, Saha R, Hopwood-Carr P, Patel B, Johnson C. Clinical placements in General Practice: concepts and considerations of implementing remote virtual placements in the COVID world. <i>Educ Prim Care.</i> 2021 Jul;32(4):237-244. doi: 10.1080/14739879.2021.1907790. Epub 2021 Apr 10. PMID: 33843454.	Exclusion for scope: focus on remote virtual consultations for students	Description of some of the UK approaches that enable remote (home) virtual patient encounters in Primary Care for medical students.
22: Rees K, Dunlop JL, Patel-Abrahams S, Struthers H, McIntyre JA. Primary healthcare workers at risk during COVID-19: An analysis of infections in HIV service providers in five districts of South Africa. <i>S Afr Med J.</i> 2021 Jan 18;111(4):309-314. doi: 10.7196/SAMJ.2021.v111i4.15434. PMID: 33944762.	Exclusion for scope: focus on HCW protection in South Africa	Analysis of self-report of employees exposed to, tested for or diagnosed with COVID-19 in 5 districts in south Africa. Conclusions: It is critical that all cadres of HCWs are protected in the workplace, including in primary care settings.
23: O'Reilly-Jacob M, Perloff J. The Effect of Supervision Waivers on Practice: A Survey of Massachusetts Nurse Practitioners During the COVID-19 Pandemic. <i>Med Care.</i> 2021 Apr 1;59(4):283-287. doi: 10.1097/MLR.0000000000001486. PMID:33704102; PMCID: PMC8132562.	Inclusion? Exclusion based on full-text: no direct info useful for the GPs provision but impact of temporary removal of practice restriction for US nurses according to themselves.	Mixed methods descriptive analysis of a web-based survey of 391 Massachusetts nurse practitioners conducted in May and June 2020. In the introduction: " <u>The severity of the US primary care physician shortage is worsening. Currently, 80 million people are without adequate access to primary care with a projected physician shortfall of up to 55,000 by 2033.1 (2018) While optimal utilization of the nurse practitioner (NP) workforce is an increasingly popular proposal to alleviate the physician shortage,1–4 contain rising health care costs,5–7 and promote team-based care,8 outdated state laws inhibit NPs from practicing to the full extent of their license and training.</u> "



References	Inclusion or Exclusion	Conclusion and Comments
24: Jonnagaddala J, Godinho MA, Liaw ST. From telehealth to virtual primary care in Australia? A Rapid scoping review. <i>Int J Med Inform.</i> 2021 Jul;151:104470. doi: 10.1016/j.ijmedinf.2021.104470. Epub 2021 Apr 22. PMID: 34000481.	Exclusion for scope: focus on informatics issues.	Conclusions: Temporary removal of state-level practice barriers alone is not sufficient to achieve immediate full scope of practice for nurse.. Rapid scoping review to examine informatics and digital health strategies that supported the primary care response to COVID-19 in Australia. 29 papers from PubMed, Scopus, Web of Science and Embase Conclusions: There is a need for more research into how telehealth and virtual models of care can improve the access, integration, safety, and quality of virtual primary care.
25: Martin-Delgado J, Viteri E, Mula A, Serpa P, Pacheco G, Prada D, Campos de Andrade Lourenção D, Campos Pavan Baptista P, Ramirez G, Mira JJ. Availability of personal protective equipment and diagnostic and treatment facilities for healthcare workers involved in COVID-19 care: A cross-sectional study in Brazil, Colombia, and Ecuador. <i>PLoS One.</i> 2020 Nov 11;15(11):e0242185. doi: 10.1371/journal.pone.0242185. PMID: 33175877; PMCID: PMC7657544.	Exclusion for population: no focus on GPs offer but on HCW needs during the early period of the pandemic.	Cross-sectional web-based survey among 1,082 HCW (534 (49.4%) physicians, 263 (24.3%) nurses, and 114 (10.5%) other professionals, in the most populous cities from three Latin American countries in April 2020. Conclusions: Healthcare professionals in Latin America may face more difficulties than those from other countries,
26: Kelly EL, Casola AR, Smith K, Kelly S, de la Cruz MSD. A qualitative analysis of third-year medical students' reflection essays regarding the impact of COVID-19 on their education. <i>BMC Med Educ.</i> 2021 Sep 9;21(1):481. doi: 10.1186/s12909-021-02906-2. PMID: 34496820; PMCID: PMC8425993.	Exclusion for population: no focus on GPs offer but on medical student concerns during the early period of the pandemic.	Qualitative study among 59 responses to a short reflection essay prompt, 3rd year medical students in Philadelphia in mid-2020. Conclusions: The medical field will need to adapt to support medical students adversely impacted by the COVID-19 pandemic, from an educational and mental health standpoint.
27: Dennelly L, Sousa C, Roberts K. Shaping the Future of Social Work Practice in Healthcare: Addressing COVID-19 Needs through Integrated Primary Care. <i>Soc Work.</i> 2021 Nov 13:swab046. doi: 10.1093/sw/swab046. Epub ahead of print. PMID:34791472.	Exclusion for population: focus on social workers, poor design	Discussion : Authors consider how the multiple medical and psychosocial needs of patients affected by COVID-19 are addressed in primary care through three core functions of social work: providing behavioral healthcare, coordinating care, and undertaking population health-based interventions. Article ends with a discussion about how social work can respond to the urgent task of transforming health within the context of social work practice, policy, and education for the next generation of healthcare social workers.



References	Inclusion or Exclusion	Conclusion and Comments
28: O'Rielly C, Ng-Kamstra J, Kania-Richmond A, Dort J, White J, Robert J, Brindle M, Sauro K. Surgery and COVID-19: a rapid scoping review of the impact of the first wave of COVID-19 on surgical services. <i>BMJ Open</i>. 2021 Jun 15;11(6):e043966. doi: 10.1136/bmjopen-2020-043966. PMID: 34130956; PMCID: PMC8210688.	Exclusion for population: no focus on GPs but rather on surgical services.	Rapid scoping review in MEDLINE, Embase and grey literature sources for documents and press releases from governments and surgical organisations or associations. 132 included studies. Conclusions: Reorganisation of surgical services in response to public health emergencies appears to be context dependent.
29: Mehta K, Zodpey S, Banerjee P, Pocius SL, Dhaliwal BK, DeLuca A, Bhattacharya SD, Hegde S, Sengupta P, Gupta M, Shet A. Shifting research priorities in maternal and child health in the COVID-19 pandemic era in India: A renewed focus on systems strengthening. <i>PLoS One</i>. 2021 Aug 12;16(8):e0256099. doi: 10.1371/journal.pone.0256099. PMID: 34383861; PMCID: PMC8360530.	Exclusion for scope: no focus on GPs offer but on MCH, context different from Belgium.	Web-based survey on six broad domains: vaccine preventable diseases, outbreak preparedness, primary healthcare integration, maternal health, neonatal health, and infectious diseases filled by 84 key stakeholders from across 15 Indian states between September and November 2020. Conclusions: The overall focus for research priorities in MCH in India during the COVID-19 pandemic is on strengthening existing services and service delivery, rather than novel research.
30: Desborough J, Dykgraaf SH, Phillips C, Wright M, Maddox R, Davis S, Kidd M. Lessons for the global primary care response to COVID-19: a rapid review of evidence from past epidemics. <i>Fam Pract</i>. 2021 Nov 24;38(6):811-825. doi: 10.1093/fampra/cmaa142. PMID: 33586769; PMCID: PMC7928916.	Inclusion? Inclusion based on full text	Literature review (in PubMed/MEDLINE, PROQUEST and Google Scholar, hand-searched reference lists of included studies, and included research identified through professional contacts) of lessons learnt from previous infectious disease epidemics for primary care, and their relevance to COVID-19. 31 publications of four epidemics in 11 countries. Cited by 18 publications. <u>Among them, 7 reviewed on full text (see below in italic): Stengels et al., Collins et al., Matenge et al., Tu et al., Bouchez et al., Goodyear-Smith et al., and Li et al.</u>
<i>Stengel S, Roth C, Breckner A, Cordes L, Weber S, Ullrich C, Peters-Klimm F, Wensing M. Resilience of the primary health care system - German primary care practitioners' perspectives during the early COVID-19 pandemic. BMC Prim Care</i>. 2022 Aug 11;23(1):203. doi: 10.1186/s12875-022-01786-9. PMID: 35948965	Inclusion? Exclusion based on full text: Focus on organizational answer during the first wave of the pandemic (July-October 2020), mostly on Corona contact point; no direct info on the GPs provision	<i>Semi-structured telephone interviews (n=39) with PCP in practices and at Corona contact points (CCP) in Baden-Wuerttemberg (Germany)</i>



References	Inclusion or Exclusion	Conclusion and Comments
Collins C, Van Poel E, Šantrić Miličević M, Tripkovic K, Adler L, Bjerve Eide T, Murauskiene L, Windak A, Nessler K, Tahirbegolli B, Willems S. Practice and System Factors Impact on Infection Prevention and Control in General Practice during COVID-19 across 33 Countries: Results of the PRICOV Cross-Sectional Survey. <i>Int J Environ Res Public Health</i> . 2022 Jun 26;19(13):7830. doi: 10.3390/ijerph19137830. PMID: 35805489	Exclusion: focus on infection prevention	Data from 4466 practices in 33 countries were included in the analysis. Notable improvement in IPC during COVID-19. Practice population size and the practice payment system were key factors related to adoption of a) range of IPC measures including patient flow arrangements and infrastructural elements
Matenge S, Sturgiss E, Desborough J, Hall Dykgraaf S, Dut G, Kidd M. Ensuring the continuation of routine primary care during the COVID-19 pandemic: a review of the international literature. <i>Fam Pract</i> . 2022 Jul 19;39(4):747-761. doi: 10.1093/fampra/cmab115. PMID: 34611708	Inclusion? Inclusion based on full text	Rapid literature review using PubMed/MEDLINE, SCOPUS, and Cochrane. Quoted <u>Danhieux et al.</u> (already found) and <u>Verhoeven et al.</u> Quoted also <u>van Weert H et al.</u> and <u>Wright et al.</u>
van Weert H. After the first wave: what effects did the COVID-19 measures have on regular care and how can general practitioners respond to this? <i>Eur J Gen Pract</i> . 2020;26(1):126–128.	<u>No abstract ; Exclusion for design but can be a source of info for the Impact of the COVID management on other diseases</u> <u>In the Netherlands alone, the estimation is that compared to the previous year, about 2.5 million referrals from primary to secondary care have not been made. While some claim that this crisis is a welcome opportunity to get rid of unnecessary health care, it is highly unlikely that this applies to all 2.5 million referrals.</u>	<u>Editorial</u> <u>Quoted WHO : The WHO reported that in 92% out of 155 responding countries, staff was reassigned from non-COVID to COVID related services. That shift mainly affected rehabilitation and chronic care, but cancer treatment and acute cardiovascular care were also often involved.</u> <u>A reasonable estimation of postponed care is about 5000 new cancers not diagnosed (yet) compared to the previous year in the Netherlands. If the numbers in the Netherlands equal those in Europe, we are 245,000 cancers behind [10].</u>
Wright A, Salazar A, Mirica M, Volk LA, Schiff GD. The invisible epidemic: neglected chronic disease management during COVID-19. <i>J Gen Intern Med</i> . 2020;35(9):2816–2817. <i>Intern Med</i> . 2020;35(9):2816–2817.	No abstract ; Exclusion for design and scope: focus on the very early impact of the COVID-19 pandemic on the rate of performance of screening and prevention services and assess the implications of these changes. (February-May 2020)	Two pages about 1 study Dramatic decline in preventive screening and monitoring for the 2 chronic diseases which occurred in February and March. Changes in outpatient LDL cholesterol and HbA1c testing and initiation of statin and metformin therapy, as representative initial steps that providers might take to reduce the risk of cardiovascular events or manage diabetes.



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Verhoeven V, Tsakitzidis G, Philips H, Van Royen P. <i>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. 2020;10(6):e039674.</i>	Inclusion? Inclusion based on full text.	Semi-structured interviews with 132 GPs in Flanders, using a topic list based on the WONCA definition of core competencies in general practice
Tu K, Sarkadi Kristiansson R, Gronsbell J, de Lusignan S, Flottorp S, Goh LH, Hallinan CM, Hoang U, Kang SY, Kim YS, Li Z, Ling ZJ, Manski-Nankervis JA, Ng APP, Pace WD, Wensaas KA, Wong WC, Stephenson E; INTRePID. <i>Changes in primary care visits arising from the COVID-19 pandemic: an international comparative study by the International Consortium of Primary Care Big Data Researchers (INTRePID). BMJ Open. 2022 May 9;12(5):e059130. doi: 10.1136/bmjopen-2021-059130.</i>	Inclusion? Inclusion based on full text. Comparison of the pandemic impact on the volume of primary care visits and uptake of virtual care in Australia, Canada, China, Norway, Singapore, South Korea, Sweden, the UK and the USA.	Through the INTRePID Consortium of Primary Care Big Data Researchers (INTRePID)
Bouchez T, Gautier S, Le Breton J, Bourgueil Y, Ramond-Roquin A. <i>The challenge for general practitioners to keep in touch with vulnerable patients during the COVID-19 lockdown: an observational study in France. BMC Prim Care. 2022 Apr 18;23(1):82. doi: 10.1186/s12875-022-01694-y. PMID: 35436865</i>	Exclusion for scope: focus on initiatives taken by French GPs to keep in touch with vulnerable patients during the early period of the pandemic (May 2020),	National observational survey using an online questionnaire Among the 3012 participant GPs (~ 5.6% of French GPs), 1419 (47.1%) reported initiatives to contact some patients without criteria-based strategy, and 808 (26.8%) with a strategy using various clinical/psychological/social criteria.
Goodyear-Smith F, Kidd M, Oseni TIA, Nashat N, Mash R, Akman M, Phillips RL, van Weel C. <i>International examples of primary care COVID-19 preparedness and response: a comparison of four countries. Fam Med Community Health. 2022 Apr;10(2):e001608. doi: 10.1136/fmch-2022-001608. PMID: 35418499</i>	Exclusion for scope: focus on global strategy of 4 different countries.	Four-country panel (Australia, South Africa, Egypt and Nigeria) differing considerably with respect to size, national economies, average age, unemployment rates and proportion of people living rurally.
Li D., Howe A.C., Astier-Peña M-P. <i>Primary health care response in the management of pandemics: Learnings from the COVID-19 pandemic. Aten Primaria. 2021 Dec;53 Suppl 1(Suppl 1):102226. doi: 10.1016/j.aprim.2021.102226.</i>	Inclusion? Inclusion based on full text	Description of two perspectives and experiences of dealing with the actual pandemic Hong Kong and China, and United Kingdom (UK). For UK, quoted the Royal College of General Practitioners. General PracticePost-COVID-19. Internet. Available from: https://www.rcgp.org.uk/policy/general-practice-post-COVID-19.aspx (JULY 2020)



References	Inclusion or Exclusion	Conclusion and Comments
31: Huang HL, Jan CJ, Bih-Jeng Chang B, Chiu TY. Factors influencing the willingness of primary care physicians to provide care during the coronavirus disease pandemic: a nationwide survey in Taiwan. <i>BMJ Open</i> . 2021 Jul 1;11(7):e049148. doi: 10.1136/bmjopen-2021-049148. PMID: 34210735; PMCID: PMC8251678.	Inclusion? Exclusion based on full text for scope: Focus on willingness to provide care during COVID pandemic by primary care physicians (37% of GPs), early period of the pandemic, context different from Belgium.	Nationwide survey among 625 primary care physicians (62.5%) working in the community in Taiwan from May to June 2020. Specialties as family physician or general practitioners had higher willingness to provide care than the specialty of rehabilitation, neurology and psychiatry.
32: Livet M, Levitt JM, Lee A, Easter J. The pharmacist as a public health resource: Expanding telepharmacy services to address social determinants of health during the COVID-19 pandemic. <i>Explor Res Clin Soc Pharm</i> . 2021 Jun 5;2:100032. doi: 10.1016/j.rcsop.2021.100032. PMID: 35481124; PMCID: PMC9030317.	Exclusion for population: no focus on GPs provision but on pharmacists role.	Exploratory study (administrative data; a clinic survey and interviews to assess clinic team members' experience with the service; and patient surveys) on the feasibility of expanding a comprehensive medication management (CMM) telepharmacy service to include social determinants of health support in North Carolina, USA. Clinic team members perceived the expanded service as highly satisfactory and beneficial. Patients also reported high levels of satisfaction and significantly increased their SDOH self-efficacy and diabetes quality of life as a result of the service.
33: Chan LG, Tan PLL, Sim K, Tan MY, Goh KH, Su PQ, Tan AKH, Lee ES, Tan SY, Lim WP, Aw CH, Goh YZ, Sadarangani S, Chow A. Psychological impact of repeated epidemic exposure on healthcare workers: findings from an online survey of a healthcare workforce exposed to both SARS (severe acute respiratory syndrome) and COVID-19. <i>BMJ Open</i> . 2021 Nov 30;11(11):e051895. doi: 10.1136/bmjopen-2021-051895. PMID: 34848518; PMCID: PMC8635888.	Exclusion for population: no focus on GPs provision but on psychological impact of COVID among all kind of HCW.	Anonymous online survey adapted from a similar study conducted during the SARS epidemic, disseminated from July 2020 to August 2020 among 3616 employees from nine healthcare institutions across Singapore ranging from primary care, community care, tertiary care and specialised referral centres. Conclusion: Overall, while 28% of HCWs suffered from significant trauma-related psychological symptoms regardless of prior experience with the SARS epidemic, those with prior experience reported feeling safer and better equipped, finding the workload easier to manage, as well as having more confidence in their healthcare leaders.
34: Beebe SL, McKague DK, Wallington SF. COVID-19 on New Primary Care Nurse Practitioners: A Qualitative Exploration. <i>J Nurse Pract</i> . 2022 Jun;18(6):601-605.e1. doi: 10.1016/j.nurpra.2022.02.026. Epub 2022 Mar 23. PMID: 35342376; PMCID: PMC8940575.	Exclusion for population: no focus on GPs offer but on NPs.	Qualitative case study with semi-structured interviews of 10 newly graduated primary care nurse practitioners in US. 2 main themes: (1) emotional burden, and (2) coping and support. This study informs educators and employers on the needs of new NPs during a global pandemic in order to better support the future workforce.



References	Inclusion or Exclusion	Conclusion and Comments
35: Javed A, Lee C, Zakaria H, Buenaventura RD, Cetkovich-Bakmas M, Duailibi K, Ng B, Ramy H, Saha G, Arifeen S, Elorza PM, Ratnasingham P, Azeem MW. Reducing the stigma of mental health disorders with a focus on low- and middle-income countries. Asian J Psychiatr. 2021 Apr;58:102601. doi:10.1016/j.ajp.2021.102601. Epub 2021 Feb 13. PMID: 33611083.	Exclusion for population: no focus on GPs offer but on mental health disorders in the general population in low and middle-income countries.	Exploration of various aspects of stigma towards mental health with a focus on low and middle-income countries and measures to increase help-seeking and access to and uptake of mental health services.
36: Eggleton K, Bui N, Goodyear-Smith F. COVID-19 impact on New Zealand general practice: rural-urban differences. Rural Remote Health. 2022 Feb;22(1):7185. doi: 10.22605/RRH7185. Epub 2022 Feb 16. PMID: 35168362. https://www.rrh.org.au/journal/article/7185	Inclusion? Exclusion based on full text for scope: Focus on GPs practice during COVID but mainly on difference rural vs urban. No useful info for the Belgium workforce.	Repeated cross-sectional surveys of 1516 primary care practices from New Zealand (at regular intervals throughout 2020). Five core questions were asked at each survey, relating to experiences of strain, capacity for testing, stressors experienced, types of consultations being carried out and numbers of patients seen. Conclusions: New Zealand rural general practice appeared to have a different response to the COVID-19 pandemic compared to urban general practice.
37: Dominic C, Gopal DP, Sidhu A. 'It's like juggling fire daily': Well-being, workload and burnout in the British NHS - A survey of 721 physicians. Work. 2021;70(2):395-403. doi: 10.3233/WOR-205337. PMID: 34633337.	Exclusion for timing: Focus on physicians well-being and workload before the pandemic period.	Survey among 721 UK physicians between March and May 2019 via the 'Doctors' Association UK' website and social media. Almost all respondents (97%) felt the NHS has a culture of viewing excessive stress and workload as the norm. Conclusions: At a national level, there is greater urgency for an <u>increase in healthcare funding and resourcing</u> especially during increased clinician workloads during a pandemic where burnout rates will increase.
38: Edelman A, Marten R, Montenegro H, Sheikh K, Barkley S, Ghaffar A, Dalil S, Topp SM. Modified scoping review of the enablers and barriers to implementing primary health care in the COVID-19 context. Health Policy Plan. 2021 Aug 12;36(7):1163-1186. doi: 10.1093/heapol/czab075. PMID: 34185844; PMCID: PMC8344743.	Inclusion? Exclusion based on full text for scope: Focus on implementation of Primary Health care in the world, mainly in low and middle income countries.. No direct information useful for the Belgium workforce after COVID.	Scoping review with a database search in PubMed for PHC-related literature reviews and multi-country analyses (Phase 1); a website search for key global PHC synthesis reports (Phase 2); targeted searches for peer-reviewed literature relating to specific components of PHC (Phase 3) and searches for emerging insights relating to PHC in the COVID-19 context (Phase 4). 96 included papers. <u>Quoted a study estimating in terms of workforce that resource needs of key PHC investments in 67 LMICs shows that LMICs need to increase their health workforces from 5.6 to 6.7 per 1000 population to provide basic functioning PHC systems, requiring substantial additional workforce investments (Stenberg et al., 2019).</u>



References	Inclusion or Exclusion	Conclusion and Comments
39: Gong F, Hu G, Lin H, Sun X, Wang W. Integrated Healthcare Systems Response Strategies Based on the Luohu Model During the COVID-19 Epidemic in Shenzhen, China. <i>Int J Integr Care</i> . 2021 Feb 2;21(1):1. doi: 10.5334/ijic.5628. PMID: 33597832; PMCID: PMC7863846.	Inclusion? Exclusion based on full text: Context too much different from Belgium, No focus on GPs but on the Luohu Integrated Health-Care System (Luohu Hospital Group) comprises five hospitals, 23 community health service institutions, six resource-sharing centers, six administrative centers, and an institute of precision medicine.	Analysis of practitioner experience with a pioneering integrated health-care system in Shenzhen, China, activated immediately after the first COVID-19 outbreak in January 2020
40: Halcomb E, Fernandez R, Ashley C, McInnes S, Stephen C, Calma K, Mursa R, Williams A, James S. The impact of COVID-19 on primary health care delivery in Australia. <i>J Adv Nurs</i> . 2022 May;78(5):1327-1336. doi: 10.1111/jan.15046. Epub 2021 Sep 23. PMID: 34554594.	Exclusion for population: no focus on GPs offer but on nurse perception of quality of care provided and job satisfaction.	Australian national online survey among 359 PHC nurses distributed via social media and professional organisations from October to December 2020. Conclusions: Many PHC nurses perceive that there has been an overall reduction in the quality of care delivered due to COVID-19 and feel that there is a lack of adequate supervision and workplace support..
41: DePuccio MJ, Sullivan EE, Breton M, McKinstry D, Gaughan AA, McAlearney AS. The Impact of COVID-19 on Primary Care Teamwork: a Qualitative Study in Two States. <i>J Gen Intern Med</i> . 2022 Jun;37(8):2003-2008. doi: 10.1007/s11606-022-07559-5. Epub 2022 Apr 11. PMID: 35412178; PMCID: PMC9002024.	Exclusion for population: no focus on GPs offer but on work changes and work relationships with other staff members during the pandemic as well as their experiences delivering telemedicine.	One-on-one, semi-structured video interviews with 42 PCPs (from family and community medicine, general internal medicine, and pediatrics) between July and December 2020 in 2 US states (Massachusetts and Ohio). Conclusions: The lack of in-person contact, and less synchronous communication, negatively impacted PCP-staff teamwork and morale during the pandemic.
42: Kumpunen S, Webb E, Permanand G, Zheleznyakov E, Edwards N, van Ginneken E, Jakab M. Transformations in the landscape of primary health care during COVID-19: Themes from the European region. <i>Health Policy</i> . 2022 May;126(5):391-397. doi: 10.1016/j.healthpol.2021.08.002. Epub 2021 Aug 14. PMID: 34489126; PMCID: PMC8364142.	Inclusion? Inclusion based on full-text.	Analysis of data from the Health System Response Monitor (HSRM), an online platform established in March 2020 in response to the COVID-19 outbreak to collect and organize up-to-date information on how countries in the WHO European region and Canada are responding to the crisis Also transmitted by external expert



References	Inclusion or Exclusion	Conclusion and Comments
43: Westlake D, Elston J, Gude A, Grading F, Husk K, Asthana S. Impact of COVID-19 on social prescribing across an Integrated Care System: A Researcher in Residence study. Health Soc Care Community. 2022 Mar 30;10.1111/hsc.13802. doi: 10.1111/hsc.13802. Epub ahead of print. PMID: 35355347; PMCID: PMC9111657.	Exclusion for scope: no focus on GPs offer but on (social prescribing (= connecting people to non-medical activities in the community)).	Analysis of the impact of COVID on the implementation of social prescribing in different UK employing organisations during the period March 2020 to April 2021. Data were collected from observations and field notes recorded during virtual interactions with over 80 social prescribing practitioners and an online survey of 52 social prescribing practitioners and middle managers.
44: Byun H, Westfall JM. Family Medicine and Emergency Redeployment: Unrealized Potential. Fam Med. 2022 Jan;54(1):44-46. doi: 10.22454/FamMed.2022.404532. PMID: 35006599.	Inclusion? Inclusion based on full text.	Compute scopes of practice for 78,416 US family physicians who treat Medicare beneficiaries: volumes of services done across six sites of service per physician. Conclusions: Family physicians are a potential resource for emergency redeployment, however the current breadth of scope for most family physicians is not aligned with current residency training requirements and raises questions about the future of family medicine scope of practice.
45: Jefferson L, Golder S, Heathcote C, Avila AC, Dale V, Essex H, van der Feltz Cornelis C, McHugh E, Moe-Byrne T, Bloor K. GP wellbeing during the COVID-19 pandemic: a systematic review. Br J Gen Pract. 2022 Apr 28;72(718):e325-e333. doi: 10.3399/BJGP.2021.0680. PMID: 35314428; PMCID: PMC8966782	Inclusion? Inclusion based on full text.	Mixed-methods <u>systematic review within 6 databases</u> (MEDLINE, Embase, PsycINFO, Science Citation Index, Social Science Citation Index, and Emerging Sources) Conclusions : 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. Also transmitted by external expert.
46: White I, Benson J, Elliott T, Walters L. Australian general practice registrars' experiences of training, well-being and support during the COVID-19 pandemic: a qualitative study. BMJ Open. 2022 Jun 20;12(6):e060307. doi: 10.1136/bmjopen-2021-060307. PMID: 35725266; PMCID: PMC9213776.	Exclusion for population: no focus on GPs offer but on experiences of Australian GP registrars with learning, well-being and support from their training organisation during the COVID-19 pandemic.	Interviews among 15 GP registrars from South Australia, Victoria and New South Wales who had experienced community-based GP training in both 2019 (prepandemic) and 2020 (early pandemic). Conclusions: Particularly significant aspects of support include connection to educational mentors; connection and culture within practices; opportunities to share clinical experiences; and connection to personal social supports.
47: Withy K, Joo K, Potter C. Hawai'i Physician Workforce Assessment 2020. Hawaii J Health Soc Welf. 2022 Apr;81(4 Suppl 2):4-10. PMID: 35495071; PMCID: PMC9036453.	Inclusion? Inclusion based on full text	Survey, internet search, direct calling methodologies, and a proprietary microsimulation modeling methodology (to assess physician demand) was used. Conclusions: The current estimated physician shortage is between 710 and 1,008 full time equivalents,



References	Inclusion or Exclusion	Conclusion and Comments
48: McGorry PD, Mei C, Chanen A, Hodges C, Alvarez-Jimenez M, Killackey E. Designing and scaling up integrated youth mental health care. <i>World Psychiatry</i> . 2022 Feb;21(1):61-76. doi: 10.1002/wps.20938. PMID: 35015367; PMCID: PMC8751571.	Exclusion for scope: Focus on mental ill-health in young adults and primary care digital platform.	Narrative? Implementing integrated youth mental health care.
49: Murray R, Cristobal F, Shrestha S, Tandino FD, De Maeseneer JM, Verma S, Dharamsi S, Willems S, Kaufman A, Pálsdóttir B, Neusy AJ, Larkins S. COVID-19 fosters social accountability in medical education. <i>Rural Remote Health</i> . 2022 May;22(2):6998. doi: 10.22605/RRH6998. Epub 2022 May 5. PMID: 35538625.	Exclusion for scope: No focus on GPs offer but on medical education.	Examples from health professional schools in high and low- and middle-income countries. Conclusions: The authors recommend health professional schools and planners consider educational redesign to produce a health workforce well equipped to respond to pandemics and meet future need.
50: Taylor MK, Kinder K, George J, Bazemore A, Mannie C, Phillips R, Strydom S, Goodyear-Smith F. Multinational primary health care experiences from the initial wave of the COVID-19 pandemic: A qualitative analysis. <i>SSM Qual Res Health</i> . 2022 Dec;2:100041. doi: 10.1016/j.ssmqr.2022.100041. Epub 2022 Jan 13. PMID: 35043104; PMCID: PMC8755427.	Inclusion? Inclusion based on full text	Qualitative thematic analysis to open-text responses from a multinational rapid response survey of primary health care experts assessing response to the initial wave of the COVID-19 pandemic. Conclusions: Primary health care experiences with the COVID-19 pandemic across the globe were similar in their levels of workforce stress, rapid technologic adaptation, and need to pivot delivery strategies, often at the expense of routine care.
51: Halcomb E, Fernandez R, Mursa R, Stephen C, Calma K, Ashley C, McInnes S, Desborough J, James S, Williams A. Mental health, safety and support during COVID-19: A cross-sectional study of primary health care nurses. <i>J Nurs Manag</i> . 2022 Mar;30(2):393-402. doi: 10.1111/jonm.13534. Epub 2022 Jan 2. PMID: 34890472.	Exclusion for population: Focus on primary health care nurses' mental health, concerns and perceived safety and supports during COVID-19.	Online cross-sectional survey among 359 Australian primary health care nurses with the Depression Anxiety Stress Scales (DASS-21) to measure emotional state. Conclusions: COVID-19 is having a significant impact on primary health care nurses' mental health. Nurse managers need to develop strategies to effectively address nurses' concerns and effectively support them to sustain the workforce during and after the pandemic.
52: Anderson H, Scantlebury A, Galdas P, Adamson J. General Practice Nurses' experiences of changing care delivery during COVID-19. Implications for future practice: Qualitative study protocol. <i>J Adv Nurs</i> . 2022 May 27;10.1111/jan.15312. doi: 10.1111/jan.15312. Epub ahead of print. PMID: 35624532; PMCID: PMC9348475.	Exclusion for population: Focus on general practice nurses experience (working practices on professional wellbeing) implementing change in delivering care during consecutive waves of the COVID-19 pandemic.	Protocol of a qualitative case study design of three to five general practice case sites in UK.



References	Inclusion or Exclusion	Conclusion and Comments
53: Tham R, Pascoe A, Willis K, Kay M, Smallwood N. Differences in psychosocial distress among rural and metropolitan health care workers during the COVID-19 pandemic. Aust J Rural Health. 2022 May 5;10.1111/ajr.12873. doi: 10.1111/ajr.12873. Epub ahead of print. PMID: 35511109; PMCID: PMC9347496.	Exclusion for scope: Focus on differences in psychological well-being between rural and metropolitan health care workers (HCWs).	Australian nationwide survey among 7846 HCW between August and October 2020. Conclusions: Despite having low COVID-19 case numbers in rural Australian health services compared with metropolitan counterparts over the course of 2020, there were widespread mental health impacts on the workforce. Rural health services need specific and flexible training, education, work policies and practices that support psychological well-being now in preparedness for ongoing or future crises.
54: Lear-Claveras A, Clavería A, Couso-Viana S, Nabbe P, Oliván-Blázquez B. Analysis of Drug and Health Resource Use Before and After COVID-19 Lockdown in a Population Undergoing Treatment for Depression or Anxiety. Front Psychol. 2022 Apr 5;13:861643. doi: 10.3389/fpsyg.2022.861643. PMID: 35478736; PMCID: PMC9037328.	Exclusion for scope: Focus on the change in use of drugs and health resources by patients. undergoing active treatment for depression or anxiety,	Analysis of the electronic clinical record between the 6 months prior to the lockdown (09/14/2019 to 03/15/2020) and the 6 months following its end (05/03/2020 to 11/04/2020) of the Aragon Regional Health Service (Spain).
55: Wu X, Mao R, Guo X. Equilibrium of Tiered Healthcare Resources during the COVID-19 Pandemic in China: A Case Study of Taiyuan, Shanxi Province. Int J Environ Res Public Health. 2022 Jun 8;19(12):7035. doi: 10.3390/ijerph19127035. PMID: 35742282; PMCID: PMC9222232.	Exclusion: Context very specific and different from Belgium; no focus on GPs offer.	Spatial analysis of two-tier medical and health resources and its influencing factors in Taiyuan, China.
56: Vanden Bossche D, Willems S, Decat P. Understanding Trustful Relationships between Community Health Workers and Vulnerable Citizens during the COVID-19 Pandemic: A Realist Evaluation. Int J Environ Res Public Health. 2022 Feb 22;19(5):2496. doi: 10.3390/ijerph19052496. PMID: 35270193; PMCID: PMC8909775	Exclusion for population: focus on trust in a Community health workers (CHWs) program offering psychosocial support to vulnerable citizens during the COVID-19 pandemic	Development of a program theory using a realist research design (Belgian team).
57: Kelly EL, Cunningham A, Sifri R, Pando O, Smith K, Arenson C. Burnout and Commitment to Primary Care: Lessons From the Early Impacts of COVID-19 on the Workplace Stress of Primary Care Practice Teams. Ann Fam Med. 2022 Jan-Feb;20(1):57-62.	Exclusion for population: Focus on staff members well-being.	Semi-structured interviews among 33 staff members from 8 US practices within a single health care system from May 11, 2020 to July 20, 2020.



References	Inclusion or Exclusion	Conclusion and Comments
doi: 10.1370/afm.2775. PMID: 35074769; PMCID: PMC8786437.		Conclusions: Primary care teams absorbed tremendous burdens during COVID-19 but also found that some stress was offset by increased support from management and colleagues, belief in their own necessity, and new development opportunities.
58: Fleming P, Thomas S, Williams D, Kennedy J, Burke S. Implications for health system reform, workforce recovery and rebuilding in the context of the Great Recession and COVID-19: a case study of workforce trends in Ireland 2008-2021. Hum Resour Health. 2022 May 26;20(1):48. doi: 10.1186/s12960-022-00747-8. PMID: 35619111; PMCID: PMC9134726.	Inclusion? Inclusion based on full text	Secondary analysis of anonymised aggregated Irish national human resources data over a period of almost 14 years, from December 31st 2008 to August 31st 2021. Conclusions: This paper clearly demonstrates the prioritisation of staff recruitment within acute services-increasing needed capacity, without the same commitment to support government policy to shift care into primary and community settings. Concerted action including the permanent redistribution of personnel is required to ensure progressive and sustainable responses are learned from recent shocks.
WHO <i>The impact of COVID-19 on mental, neurological and substance use services: results of a rapid assessment</i> https://www.who.int/publications/i/item/978924012455	<i>Exclusion for population: no focus on GPs but on utilization of mental health services</i>	
59: Seidu S, Hambling C, Holmes P, Fernando K, Campbell NS, Davies S, Khunti K; PCDS Research Group. The impact of the COVID pandemic on primary care diabetes services in the UK: A cross-sectional national survey of views of health professionals delivering diabetes care. Prim Care Diabetes. 2022 Apr;16(2):257-263. doi: 10.1016/j.pcd.2021.12.015. Epub 2022 Jan 13. PMID: 35033477; PMCID: PMC8754561.	Exclusion for scope: Focus on specific diabetic care and workload during the pandemic.	Online survey among 975 healthcare and allied health professionals delivering diabetes care (mostly nurses or nurse practitioners and doctors) in the UK from January to May 2021. Conclusions: COVID-19 pandemic has had significant impact on the ability of healthcare professionals and their practices to deliver routine diabetes care. Failure to restore primary care provision urgently and safely to at least pre-pandemic levels in a sustainable manner may lead to emotionally drained and overworked workforce in primary care, place additional burden on the already overburdened healthcare system and worse outcomes for patients.
60: Mascayano F, van der Ven E, Moro MF, et al. HEROES group. The impact of the COVID-19 pandemic on the mental health of healthcare workers: study protocol for the COVID-19 HEalth caRe wOrkErS (HEROES) study. Soc Psychiatry Psychiatr Epidemiol. 2022 Mar;57(3):633-645. doi: 10.1007/s00127-021-02211-9. Epub 2022 Jan 22. PMID: 35064280; PMCID: PMC8782684.	Exclusion for design: Focus on mental health of HCW; protocol	Protocol of the COVID-19 HEalth caRe wOrkErS (HEROES) study, an ongoing, global initiative, aimed to describe and track longitudinal trajectories of mental health symptoms and disorders among ~34,000 health care workers at different phases of the pandemic across a wide range of countries in Latin America, Europe, Africa, Middle-East, and Asia (26 countries)



References	Inclusion or Exclusion	Conclusion and Comments
61. Lear-Claveras A, González-Álvarez B, Couso-Viana S, Clavería A, Oliván-Blázquez B. Analysis of Clinical Parameters, Drug Consumption and Use of Health Resources in a Southern European Population with Alcohol Abuse Disorder during COVID-19 Pandemic. <i>Int J Environ Res Public Health</i> . 2022 Jan 26;19(3):1358. doi: 10.3390/ijerph19031358. PMID: 35162380; PMCID: PMC8835241.	Exclusion for population: Focus on use of health care service by patients with alcohol dependence.	Observational real world data pre-post study among 9966 men aged >16 years registered as having the diagnosis of alcohol abuse disorder in the electronic medical records (EMR) of the Aragon Regional Health Service (Spain).
62. Baines R, Tredinnick-Rowe J, Jones R, Chatterjee A. Barriers and Enablers in Implementing Electronic Consultations in Primary Care: Scoping Review. <i>J Med Internet Res</i> . 2020 Nov 12;22(11):e19375. doi: 10.2196/19375. PMID: 33035177	Exclusion for scope: focus on implementation of of electronic consultations in primary care	Scoping review in 5 electronic databases (PubMed, Medline, Embase, CINAHL, and PsycINFO) CONCLUSIONS: Need for proactive engagement with patients and staff to facilitate understanding and awareness, process optimization, and delivery of coherent training and education.
63. Joy M, McGagh D, Jones N, Liyanage H, Sherlock J, Parimalanathan V, Akinyemi O, van Vlymen J, Howsam G, Marshall M, Hobbs FR, de Lusignan S. Reorganisation of primary care for older adults during COVID-19: a cross-sectional database study in the UK. <i>Br J Gen Pract</i> . 2020 Jul 30;70(697):e540-e547. doi: 10.3399/bjgp20X710933. Print 2020 Aug. PMID: 32661009	Inclusion? Inclusion based on full text	Cross-sectional database study examining consultations between 17 February and 10 May 2020 for patients aged ≥65 years, drawn from primary care practices within the Oxford Royal College of General Practitioners (RCGP) Research and Surveillance Centre (RSC) sentinel network, UK
64. Xin R., Li L., Qiaoli S., Xingyue W. Real Workload-Situated Training in COVID-19 Prevention of General Practice Residents in China: A Situated Cognition Study. <i>Frontiers in public health</i> 2021 9 (765402-)	Exclusion for context and scope: Focus on education of GP residents in China	
65. Novak H., Tadić I., Falamić S., Ortner Hadžiabdić M. Pharmacists' role, work practices, and safety measures against COVID-19: A comparative study. <i>J Am Pharm Assoc</i> (2003). 2021 Jul-Aug;61(4):398-407. doi: 10.1016/j.japh.2021.03.006. Epub 2021 Mar 17. PMID: 33820717.	Exclusion for population: Focus on pharmacists	



References	Inclusion or Exclusion	Conclusion and Comments
66. Torrent-Ramos P, González-Chordá VM, Mena-Tudela D, Pejó LA, Roig-Martí C, Valero-Chillerón MJ, Cervera-Gasch Á. Healthcare Management and Quality during the First COVID-19 Wave in a Sample of Spanish Healthcare Professionals. Nurs Rep. 2021 Jul 13;11(3):536-546. doi: 10.3390/nursrep11030051. PMID: 34968329	Inclusion? Heavier workload ($m = 4.08 \pm 1.011$) and patients' complexity ($m = 3.77 \pm 1.086$) were the factors that most negatively impacted healthcare quality. Exclusion based on full text for population: consider health care workers in all kind of services (primary care included) but with a majority of nurses in the samples and no subgroup analysis for GPs.	Cross-sectional study with an online survey between 1 and 15 July 2020 in the Castellón Province (E Spain), where the health system is organized into three health departments, each with a reference hospital and different primary care centers that each cover populations between 200,000 and 250,000 inhabitants. 382 surveys, registered nurses (56.8%); doctors (18.1%); Nursing assistants (18.1%); others.
67. Zhang T, Shen X, Liu R, Zhao L, Wang D, Lambert H, Cabral C. The impact of COVID-19 on primary health care and antibiotic prescribing in rural China: qualitative study. BMC Health Serv Res. 2021 Oct 5;21(1):1048. doi: 10.1186/s12913-021-07082-z. PMID: 34610843 Free PMC article.	Exclusion for context: rural area in China where no substitution with consultations by phone or app was possible	
68. Ullrich A, Schranz M, Rexroth U, Hamouda O, Schaade L, Diercke M, Boender TS; Robert Koch's Infectious Disease Surveillance Group. Impact of the COVID-19 pandemic and associated non-pharmaceutical interventions on other notifiable infectious diseases in Germany: An analysis of national surveillance data during week 1-2016 - week 32-2020. Lancet Reg Health Eur. 2021 Jun 19;6:100103. doi: 10.1016/j.lanepe.2021.100103. eCollection 2021 Jul. PMID: 34557831	Exclusion for scope: focus on disease transmission.	Regression analysis on a weekly aggregated time-series incorporating trend and seasonality, to compute the relative change in case numbers (for 32 nationally notifiable disease categories with case numbers >100/year) during week 2020-10 to 2020-32 (pandemic/NPIs), in comparison to week 2016-01 to 2020-09. During the COVID-19 pandemic a drastic decrease of notifications for most infectious diseases and pathogens was observed. Our findings suggest effects of non-pharmaceutical interventions on overall disease transmission that require further investigation.
69. Williams R, Jenkins DA, Ashcroft DM, Brown B, Campbell S, Carr MJ, Cheraghi-Sohi S, Kapur N, Thomas O, Webb RT, Peek N. Diagnosis of physical and mental health conditions in primary care during the COVID-19 pandemic: a retrospective cohort study. Lancet Public Health. 2020 Oct;5(10):e543-e550. doi: 10.1016/S2468-2667(20)30201-2. Epub 2020 Sep 23. PMID: 32979305.	Inclusion? Inclusion based on full text	Retrospective cohort study Objective: to investigate the indirect effect of the COVID-19 pandemic on general practice health-care usage, and the subsequent diagnoses of common physical and mental health conditions in a deprived UK population. Early period in the pandemic



References	Inclusion or Exclusion	Conclusion and Comments
70. Stedman M, Lunt M, Davies M, Gibson M, Heald A. COVID-19: Generate and apply local modelled transmission and morbidity effects to provide an estimate of the variation in overall relative healthcare resource impact at general practice granularity. <i>Int J Clin Pract.</i> 2020 Sep;74(9):e13533. doi: 10.1111/ijcp.13533. Epub 2020 Jun 23. PMID: 32392377	Exclusion for scope: Focus on a model of transmission at the early period of the pandemic	
71. Borman AM, Fraser M, Patterson Z, McLachlan S, Palmer MD, Mann C, Oliver D, Brown P, Linton CJ, Dziecnyk A, Hedley M, Gough M, Johnson EM. The considerable impact of the SARS-CoV-2 pandemic and COVID-19 on the UK National Mycology Reference Laboratory activities and workload. <i>Med Mycol.</i> 2021 Nov 3;59(11):1068-1075. doi: 10.1093/mmy/myab039. PMID: 34259872	Exclusion for population: Focus on the UK National mycology reference laboratory	
72. Moey PKS, Ang ATW, Ee AGL, Ng DCC, Ng MCW, Teo SSH, Tay EG, Tan NC What are the measures taken to prevent COVID-19 infection among healthcare workers? A retrospective study in a cluster of primary care clinics in Singapore. <i>BMJ Open.</i> 2021 Jun 28;11(6):e049190. doi: 10.1136/bmjopen-2021-049190. PMID: 34183349	Exclusion for scope: Focus on COVID prevention measures	
73. Shah SS, Safa A, Johal K, Obika D, Valentine S. A prospective observational real world feasibility study assessing the role of app-based remote patient monitoring in reducing primary care clinician workload during the COVID pandemic. <i>BMC Fam Pract.</i> 2021 Dec 16;22(1):248. doi: 10.1186/s12875-021-01594-7. PMID: 34911442 Free PMC article.	Inclusion? Exclusion based on full-text : No focus on quota but on support for GPs (an app-based remote patient monitoring solution in reducing the workload of a clinician and reflect this as time-saved in an economic context.)	Conclusion: App-based remote patient monitoring potentially holds large economic benefit to COVID-19 patients. In wake of further waves or future pandemics, and even in routine care, app-based remote monitoring patients could free up vital resources in terms of clinical team's time, allowing a better reallocation of services.



References	Inclusion or Exclusion	Conclusion and Comments
74. Stocker R, Russell S, Liddle J, Barker RO, Remmer A, Gray J, Hanratty B, Adamson J. Experiences of a National Early Warning Score (NEWS) intervention in care homes during the COVID-19 pandemic: a qualitative interview study. <i>BMJ Open</i> . 2021 Jul 27;11(7):e045469. doi: 10.1136/bmjopen-2020-045469. PMID: 34315790	Exclusion for scope: focus on telemonitoring in care homes	
75. Royal A, Mali MA, Kumar V, Wagh IA, Bhushan S, Mokul AN, Mehta K, Bhattacharya S. Harnessing the potential of the primary healthcare facilities in India to respond COVID-19 pandemic: A scoping evidence-based research synthesis. <i>J Family Med Prim Care</i> . 2021 Jan;10(1):116-121. doi: 10.4103/jfmpc.jfmpc_1609_20. Epub 2021 Jan 30. PMID: 34017712 Free PMC article. Review	Exclusion for scope and context: focus on the role of primary care during the pandemic, mostly to control the infection in India	This article explores the scope and importance of strengthening PHC in breaking the chain of the transmission of this infectious disease, building an adequate response to minimize its disastrous consequences and prevent future emerging and reemerging disease outbreaks, if any.
76. Mandal A, Purkey E. Psychological Impacts of the COVID-19 Pandemic on Rural Physicians in Ontario: A Qualitative Study. <i>Healthcare (Basel)</i> . 2022 Feb 28;10(3):455. doi: 10.3390/healthcare10030455. PMID: 35326933 Free PMC article.	Inclusion? Inclusion based on full text.	Survey by questionnaire filled by 25 rural full-time primary care physicians. Recommendations include establishing a rapid locum supply system, ensuring rural representation at decision-making tables, and taking an organizational approach to support the mental health of rural physicians.
77. McDermott K. Utilizing diagnostic pharmacists to support Family Medicine Walk-In clinics during the COVID-19 pandemic. <i>J Am Pharm Assoc</i> (2003). 2022 Mar-Apr;62(2):612-619. doi: 10.1016/j.japh.2021.10.022. Epub 2021 Oct 23. PMID: 34802944	Exclusion for context and population: diagnostic pharmacists in an Indian Health service medical center. <u>Proposals for PC adaptation:</u> Specially trained pharmacists were utilized to alleviate Family Medicine Walk-In (FMWI) provider shortages.	Calculation of absolute number of visits by pharmacists, number of provider hours shifted to pharmacy, number of visits by provider type, reimbursement rates. Conclusion: Diagnostic pharmacists in FMWI have allowed providers to shift to other pandemic duties and demonstrate similar workload as advanced practice providers (APPs).
78. Ribes J, Pareja L, Sanz X, Mosteiro S, Escribà JM, Esteban L, Gálvez J, Osca G, Rodenas P, Pérez-Sust P, Borràs JM. Cancer diagnosis in Catalonia (Spain) after two years of COVID-19 pandemic: an incomplete recovery. <i>ESMO Open</i> . 2022 Jun;7(3):100486. doi: 10.1016/j.esmoop.2022.100486. Epub 2022 Apr 14. PMID: 35714476	Inclusion? Aim to estimate the correlation between cancer diagnosis and COVID-19 health care workload Inclusion based on full-text.	Comparison of cancer incidence between pre-pandemic (2019) and pandemic (March 2020-January 2022) periods in the Catalan Pathology Registry (CPR)



References	Inclusion or Exclusion	Conclusion and Comments
79. Clyne B, Hynes L, Kirwan C, McGeehan M, Byrne P, Killilea M, Smith SM, Ryan M, Collins C, O'Neill M, Wallace E, Murphy AW, Kelly ME. Perspectives on the production, and use, of rapid evidence in decision making during the COVID-19 pandemic: a qualitative study. <i>BMJ Evid Based Med.</i> 2022 Jun 30:bmjebm-2021-111905. doi: 10.1136/bmjebm-2021-111905. Online ahead of print. PMID: 35772940	Exclusion for scope: Focus on production of rapid evidence	Descriptive qualitative study by semi-structured interviews in Ireland (March-August 2020) in 25 participants: Purposive sample of 14 evidence providers (EPs: generated and disseminated rapid evidence) and 11 service users (SUs: GPs and policy-makers, who used the evidence). Conclusions: The credibility of EPs, a close relationship with SUs and having a highly skilled and adaptable team to meet the workload demands were identified as key strengths that optimised the utilisation of rapid evidence.
80. Schaffler-Schaden D., Mergenthal K., Avian A., Huter S., Spary-Kainz U., Bachler H., Flamm M., Siebenhofer A. COVI-Prim Longitudinal Survey: Experiences of Primary Care Physicians During the Early Phase of the COVID-19 Pandemic. [In Process] <i>Frontiers in Medicine (Lausanne).</i> 2022 Feb 21;9:761283. doi: 10.3389/fmed.2022.761283. eCollection 2022. PMID: 35265636	Inclusion? Inclusion based on full text	Online survey among 723 GPs in Austria and Germany over a period of 12 weeks (April 3–July 2, 2020). Conclusions: Following a difficult initial phase when protective equipment and information were lacking, physicians in primary care adapted quickly to new situations. Experience with telemedicine should help them face future challenges and may help prevent a decline in the delivery of routine health care and care for chronically ill patients.
81. Caney SMA, Robinson NJ, Gunn-Moore DA, Dean RS. Veterinary surgeons', veterinary nurses' and owners' experiences of feline telemedicine consultations during the 2020 COVID-19 pandemic. <i>Vet Rec.</i> 2022 Jun 3:e1738. doi: 10.1002/etr.1738. Online ahead of print. PMID: 35661164	Exclusion for population: animals care	
82. Mota Romero E, Puente Fernández D, Rodríguez Pertíñez C, Árbol Fernández G, Moreno Guerrero S, Montoya Juárez R. Inadequate human resources, equipment and training: A qualitative assessment of the objectives of the NUHELP end-of-life care programme in the context of the COVID-19 pandemic. <i>Palliat Med.</i> 2022 Jun 21:2692163221103099. doi: 10.1177/02692163221103099. Online ahead of print. PMID: 35730120	Exclusion for population: Focus on nursing home and end-of-life care programme.	Semi-structured interviews from March to November 2020 with 20 professionals from nursing homes and primary care facilities who participated in the development of the NUHELP programme. Conclusions: The pandemic cast light on existing shortcomings in nursing homes in terms of comprehensive assessments, communication, decision making, grief management and palliative care complexity. Nursing homes need more human, material and training resources, as well as improved coordination with the public healthcare system.



References	Inclusion or Exclusion	Conclusion and Comments
83. Mahlknecht A, Barbieri V, Engl A, Piccoliori G, Wiedermann CJ. Challenges and experiences of general practitioners during the course of the Covid-19 pandemic: a northern Italian observational study-cross-sectional analysis and comparison of a two-time survey in primary care. Fam Pract. 2022 Apr 8;cmac025. doi: 10.1093/fampra/cmac025. Online ahead of print. PMID: 35395089	Inclusion? Inclusion based on full text:	2-time cross-sectional online survey involving GPs in a northern Italian region in September 2020 and March/April 2021. Conclusion: The work of GPs has been substantially impacted by the ongoing Covid-19 pandemic. Efforts should be undertaken to efficiently strengthen primary care which plays an important role in pandemic events.
84. Outeirinho C, Braga R, Costa Gomes J, Alves L, Cruz AM. [The Impact of the COVID-19 Pandemic on the Healthcare System and on the Mental Health of Primary Health Care Providers]. Acta Med Port. 2022 Jul 27. doi: 10.20344/amp.17632. Online ahead of print. PMID: 35899826. Portuguese.	Exclusion for language	
85. Timmermans L, Huybrechts I, Decat P, Foulon V, Van Hecke A, Vermandere M, Schoenmakers B. Recommendations for Researchers on Synchronous, Online, Nominal Group Sessions in Times of COVID-19: Fishbone Analysis. JMIR Form Res. 2022 Mar 25;6(3):e34539. doi: 10.2196/34539. PMID: 35225814 Free PMC article.	Exclusion for scope: focus on issue of synchronous, online, nominal group sessions for group brainstorming.	Share experiences with performing online, nominal group sessions using the video conference software Microsoft Teams Belgium
86. Saunders CL, Gkousis E. Impact of telephone triage on access to primary care for people living with multiple long-term health conditions: rapid evaluation. Southampton (UK): National Institute for Health and Care Research; 2022 Jun. PMID: 35793423 Free Books & Documents. Review.	Exclusion for scope: Focus on the use of telephone triage before the pandemic and more specifically on the access according to the presence or not of multimorbidity.	Analysis of data from the English GP Patient Survey to explore the inequalities impact of introducing telephone triage in 154 general practices in England between 2011 and 2017.
87. van de Vijver S, Hummel D, van Dijk AH, Cox J, van Dijk O, Van den Broek N, Metting E. Evaluation of a Digital Self-management Platform for Patients With Chronic Illness in Primary Care: Qualitative Study of Stakeholders' Perspectives. JMIR Form Res. 2022 Aug 3;6(8):e38424. doi: 10.2196/38424. PMID: 35921145	Exclusion for scope: Focus on the use of a digital self-care platform for patients with chronic disease.	Explorative study combining questionnaires and interviews among patients and general practitioners from 3 general practices that used the digital platform Several key benefits of the platform as reduced time requirements, reduced workload, improved care quality, and improved accessibility due to the greater patient-centeredness and use of different communication tools + greater patient autonomy and empowerment..



References	Inclusion or Exclusion	Conclusion and Comments
88. Sidhu M, Pollard J, Sussex J. Vertical integration of GP practices with acute hospitals in England and Wales: rapid evaluation. Southampton (UK): National Institute for Health and Care Research; 2022 Jun. PMID: 35782005	Inclusion? Exclusion based on full text: Focus on one model of care (vertical integration as acute hospital running for GPs), the rationale for, and early impact of, in the NHS in England and Wales; no info on the GPs workforce and COVID impact; <u>rather proposal for PC adaptation.</u>	Report of 138 pages cross-comparative case study qualitative evaluation, comprising three work packages (WPs). Impact on GPs staffing = reduction in personal financial risk for GP partners; increased training for all types of practice staff and opportunities for GPs to develop specialist interests; opportunity for GPs to focus on clinical work and leave 'running the business' to others => integration practices more attractive to some potential GP recruits. Therefore, vertical integration is a valuable option to consider when general practices look likely to fail; however, it is not an option that should be imposed from the top down. Many GPs evidently do not wish to join such arrangements. Vertical integration may be a route to better integration of patient care, at least in some areas, but it is not the only route.

2.2. Publications identified in EMBASE

References	Inclusion or Exclusion	Conclusion and Comments
1. Vakkalanka J.P., Nataliansyah M.M., Merchant K.A.S., Mack L.J., Parsons S., Mohr N.M., Ward M.M. Telepsychiatry services across an emergency department network: A mixed methods study of the implementation process. American Journal of Emergency Medicine 2022 59 (79-84)	Exclusion for population: Focus on telepsychiatry service in ED settings	Conclusions: Implementation of a telepsychiatry service in ED settings may be beneficial to the patient, local ED, and the underserved community. Implementing this service alleviated the burden of care during the COVID-19 pandemic, enhanced local site capability, and improved local ability to provide quality and effective care.
2. Jones D.L., Zhang Y., Rodriguez V.J., Haberen S., Ramirez C., Adimora A.A., Merenstein D., Aouizerat B., Sharma A., Wilson T., Mimiaga M.J., Sheth A.N., Plankey M., Cohen M.H., Stosor V., Kempf M.-C., Friedman M.R. Association of PTSD With Longitudinal COVID-19 Burden in a Mixed-Serostatus Cohort of Men and Women: Weathering the Storm Journal of acquired immune deficiency syndromes (1999) 2022 90:5 (567-575)	Exclusion for population: Focus on the impact of posttraumatic stress disorder (PTSD) on COVID-19 burden in people with HIV (PWH) and those without HIV conducted during the COVID-19 pandemic in the United States in 2020.	



References	Inclusion or Exclusion	Conclusion and Comments
3. Outeirinho C., Braga R., Costa Gomes J., Alves L., Cruz A.M. The Impact of the COVID-19 Pandemic on the Healthcare System and on the Mental Health of Primary Health Care Providers Acta medica portuguesa 2022	Exclusion for language (Portuguese)	The COVID-19 pandemic led to considerable changes in the dynamics of primary health care. The time pressure to carry out tasks and the level of concentration required were associated with a higher risk of mental disease. The support felt by healthcare professionals regarding their problems and concerns and the existence of places to relax in the health units were identified as protective factors. Health promotion, the maintenance of the social contacts of healthcare professionals and their involvement in the processes should be taken into account in the organizational dynamics of the institutions.
4. Giebel C., Talbot C.V., Wharton E., Lorenz-Dant K., Suárez-González A., Cannon J., Tetlow H., Lion K.M., Thyrian J.R. The early impacts of COVID-19 on unpaid carers of people living with dementia: part II of a mixed-methods systematic review Aging & mental health 2022 (1-16)	Exclusion for population: Focus on unpaid dementia carers	
5. Manthorpe J., Iliffe S., Gillen P., Moriarty J., Mallett J., Schroder H., Currie D., Ravalier J., McFadden P. Clapping for carers in the Covid-19 crisis: Carers' reflections in a UK survey Health & social care in the community 2022 30:4 (1442-1449)	Exclusion for scope: Focus on clapping for carers.	
6. DePuccio M.J., Sullivan E.E., Breton M., McKinsty D., Gaughan A.A., McAlearney A.S. The Impact of COVID-19 on Primary Care Teamwork: a Qualitative Study in Two States Journal of General Internal Medicine 2022 37:8 (2003-2008)	Duplicate	
7. Lear-Claveras A., Oliván-Blázquez B., Clavería A., Couso-Viana S., Botaya R.M. Analysis of Clinical Parameters, Drug Consumption and Use of Health Resources in a Southern European Population with Diabetes That Did Not Contract COVID-19: A Longitudinal Big Data Study	Exclusion for population: No focus on GPs but on patients with diabetes.	The consumption, by these patients, of hypoglycaemic drugs and the use of health resources continue at below pre-pandemic levels, six months later. The interruption in care for these patients and the lifestyle change resulting from the pandemic do not appear to have had a significant impact on the health of the diabetic population.



References	Inclusion or Exclusion	Conclusion and Comments
International Journal of Environmental Research and Public Health 2022 19:11 Article Number 6835		
8. Wu X., Mao R., Guo X. Equilibrium of Tiered Healthcare Resources during the COVID-19 Pandemic in China: A Case Study of Taiyuan, Shanxi Province [In Process] International Journal of Environmental Research and Public Health 2022 19:12 Article Number 7035	Duplicate	
9. Wright T., Mughal F., Babatunde O.O., Dikomitil L., Mallen C.D., Helliwell T. Burnout among primary health-care professionals in low- and middle-income countries: systematic review and meta-analysis Bulletin of the World Health Organization 2022 100:6 (385-401A)	Exclusion for context: low-and middle-income countries	
10. Long M., Coates E., Price O.A., Hoffman S.B. Mitigating the Impact of Coronavirus Disease-2019 on Child and Family Behavioral Health: Suggested Policy Approaches Journal of Pediatrics 2022 245 (15-21)	Exclusion for population: pediatric providers	
11. Ribes J., Pareja L., Sanz X., Mosteiro S., Escribà J.M., Esteban L., Gálvez J., Osca G., Rodenas P., Pérez-Sust P., Borràs J.M. Cancer diagnosis in Catalonia (Spain) after two years of COVID-19 pandemic: an incomplete recovery [In Process] ESMO Open 2022 7:3 Article Number 100486	Duplicate	
12. Becker C., Achterberg W. Quo vadis geriatric rehabilitation? [In Process] Age and Ageing 2022 51:6 Article Number afac040	Inclusion? Exclusion for population based on full text: Focus on care organization for elderly people (Not really on COVID impact but on ageing)	Commentary build on recent book chapters and articles on geriatric rehabilitation Discussing and deciding upon the priorities of value-based health care for older people such as equity and access is required. The acute healthcare sector in most countries focuses on fee-for-service models instead of building systemic approaches to maximise independence and autonomy of older citizens.



References	Inclusion or Exclusion	Conclusion and Comments
13. White I., Benson J., Elliott T., Walters L. Australian general practice registrars' experiences of training, well-being and support during the COVID-19 pandemic: A qualitative study BMJ Open 2022 12:6 Article Number e060307	Duplicate	
14. Kiernan B., Alonis A., Diala J.A., Willard-Grace R., Welty S., White K., Dorian A., Dunn C., Peare A., Westfall M., Shodahl S., Brickley D.B. Virtual Trainings Effectively Prepared the Public Health Workforce to Support Schools During the COVID-19 Pandemic in California in 2021 Journal of public health management and practice : JPHMP 2022	Exclusion for population: Focus on school staff	
15. Hutsebaut C., Rens E., Ghijselings A., Scheepers J., Deneyer H., Cautaers A., Van Den Broeck K., Foulon V. CAVASa: Pharmacists' taking up a role in the detection and referral of patients with (unmet) mental and psychosocial needs International Journal of Clinical Pharmacy 2022 44:3 (803-804)	Exclusion for population and design: No focus on GPs but on pharmacists' potential role in mental and psychological health	Abstract for the 8 th PCNE symposium about a pilot study (training, providing posters and informative leaflets) among 70 community pharmacists in Belgium (Flanders) in September 2021. Conclusion: Despite the good position of the community pharmacist to detect psychosocial needs and the willingness of the participants, some barriers exist for the implementation, especially time constraints. COVID-19 made this extra challenging.
16. Fleming P., Thomas S., Williams D., Kennedy J., Burke S. Implications for health system reform, workforce recovery and rebuilding in the context of the Great Recession and COVID-19: a case study of workforce trends in Ireland 2008-2021 Human resources for health 2022 20:1 (48-)	Duplicate	
17. Jackson C.L. Living with COVID-19 in 2022: the impact of the pandemic on Australian general practice Medical Journal of Australia 2022 216:9 (442-444)	Inclusion? No abstract available Inclusion based on full text	Commentary With very little resourcing to support the Herculean task of staff restructure, adaptation to rapidly changing practice protocols, practice-wide vaccination training, complex administrative and information technology redesign, and rapidly escalating service demand, general practices nationally have faced huge COVID-19-related challenges.



References	Inclusion or Exclusion	Conclusion and Comments
18. Tham R., Pascoe A., Willis K., Kay M., Smallwood N Differences in psychosocial distress among rural and metropolitan health care workers during the COVID-19 pandemic. The Australian journal of rural health 2022	Duplicate	
19. Kumpunen S., Webb E., Permanand G., Zheleznyakov E., Edwards N., van Ginneken E., Jakab M. Transformations in the landscape of primary health care during COVID-19: Themes from the European region Health Policy 2022 126:5 (391-397)	Duplicate	
20. Jefferson L., Golder S., Heathcote C., Avila A.C., Dale V., Essex H., van der Feltz Cornelis C., McHugh E., Moe-Byrne T., Bloor K. GP wellbeing during the COVID-19 pandemic: a systematic review [In Process] British Journal of General Practice 2022 72:718 (E325-E333)	Duplicate	
21. Halcomb E., Fernandez R., Ashley C., McInnes S., Stephen C., Calma K., Mursa R., Williams A., James S. The impact of COVID-19 on primary health care delivery in Australia Journal of advanced nursing 2022 78:5 (1327-1336)	Duplicate	
22. Gardiner S., MacLellan J. Delivering Covid-19 research during the UK pandemic: Experiences of a local research taskforce. Journal of advanced nursing 2022 78:5 (1402-1412)	Exclusion for population: Focus on nurses research.	
23. Harris T.B., Jacobs N.N., Fuqua C.F., Lyness J.M., Smith P.O., Poll-Hunter N.I., Piggott C., Monroe A.D. Advancing Equity in Academic Medicine Through Holistic Review for Faculty Recruitment and Retention Academic medicine : journal of the Association of American Medical Colleges 2022 97:5 (631-634)	Exclusion for population and scope: Focus on medical schools and student diversity.	



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24. Murray R., Cristobal F., Shrestha S., Tandino F.D., De Maeseneer J.M., Verma S., Dharamsi S., Willems S., Kaufman A., Pálsdóttir B., Neusy A.-J., Larkins S. COVID-19 fosters social accountability in medical education Rural and remote health 2022 22:2 (6998-)	Exclusion for population and scope: Focus on health professional schools and educational redesign to produce a health workforce well equipped to respond to pandemics and meet future need.	
25. Khan A., Murdoch C., Wamuo I. Rheumatology (United Kingdom) 2022 61:SUPPL 1 (i35-)	Exclusion for population: Focus on one novel, urgent, hot Rheumatology Clinic developed in an Ambulatory Emergency Care (AEC) department during the pandemic.	
26. Rusby N.K., Bridges M. Pharmacist-led osteoporosis telephone service Rheumatology (United Kingdom) 2022 61:SUPPL 1 (i83-i84)	Exclusion for population: Focus on one novel telephone assessment clinic, run by a departmental pharmacist, to assess and treat patients with osteoporosis who have been referred from primary care for consideration of parenteral bone sparing therapy.	
27. Gierszewski D., Kurowska P.K., Krauthausen M., Fröhlich W., Forster J., Pietsch F., Streng A., Rücker V., Wallstabe J., Hartmann K., Jans T., Engels G., Romanos M., Heuschmann P., Härtel C., Kurzar O., Liese J., Gágyor I. Parents' and Childcare Workers' Perspectives Toward SARS-CoV-2 Test and Surveillance Protocols in Pre-school Children Day Care Centers: A Qualitative Study Within the German Wü-KiTa-CoV Project [In Process] Frontiers in Medicine 2022 9 Article Number 897726	Exclusion for population: Focus on children testing in school	
28. Mahlke A., Barbieri V., Engl A., Piccoliori G., Wiedermann C.J. Challenges and experiences of general practitioners during the course of the Covid-19 pandemic: a northern Italian observational study-cross-sectional analysis and comparison of a two-time survey in primary care	Duplicate	



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Family practice 2022		
29. Seidu S., Hambling C., Holmes P., Fernando K., Campbell N.S., Davies S., Khunti K. The impact of the COVID pandemic on primary care diabetes services in the UK: A cross-sectional national survey of views of health professionals delivering diabetes care Primary Care Diabetes 2022 16:2 (257-263)	Duplicate	
30. Withy K., Joo K., Potter C. Hawai'i Physician Workforce Assessment 2020 Hawai'i journal of health & social welfare 2022 81:4 Supplement 2 (4-10)	Duplicate	
31. Westlake D., Elston J., Gude A., Gradinger F., Husk K., Asthana S. Impact of COVID-19 on social prescribing across an Integrated Care System: A Researcher in Residence study Health & social care in the community 2022	Duplicate	
32. Corner E.J., Camilleri M., Dholakia S., Gredal C., Hansen T., Jeans J., LeNovere M., Mallender J., Monkhouse A., Purkiss C., Ting T.K., Vindrola-Padros C., Welfare S., Wood D., Wood J. The clinically led worforcE and activity redesign (CLEAR) programme: a novel data-driven healthcare improvement methodology BMC health services research 2022 22:1 (366-)	Exclusion for scope: Focus on workforce modelling (The Clinically Lead worforcE and Activity Redesign (CLEAR) programme that trains clinicians to redesign services, building intrinsic capacity and capability, optimising patient care and minimising the need for costly external consultancy).	
33. McDermott K. Utilizing diagnostic pharmacists to support Family Medicine Walk-In clinics during the COVID-19 pandemic Journal of the American Pharmacists Association 2022 62:2 (612-619)	Duplicate	



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34. Vanden Bossche D., Willems S., Decat P. Understanding Trustful Relationships between Community Health Workers and Vulnerable Citizens during the COVID-19 Pandemic: A Realist Evaluation International Journal of Environmental Research and Public Health 2022 19:5 Article Number 2496	Duplicate	
35. Tran J., Willis K., Kay M., Hutt K., Smallwood N. The Workplace and Psychosocial Experiences of Australian Senior Doctors during the COVID-19 Pandemic: A Qualitative Study International Journal of Environmental Research and Public Health 2022 19:5 Article Number 3079	Inclusion? Exclusion based on full text for population : focus on senior medical staff working in secondary and tertiary care.	A cross-sectional, anonymous, national, online survey between the 27th of August and 23rd of October 2020 Of 9518 responses, 1083 senior doctors responded to one or more free-text questions. Four themes were identified: (1) work-life challenges; (2) poor workplace safety, support, and culture; (3) poor political leadership, planning and support; and (4) media and community responses. Key issues impacting mental health included supporting staff wellbeing, moral injury related to poorer quality patient care, feeling unheard and undervalued within the workplace, and pandemic ill-preparedness. Senior doctors desired better crisis preparedness, HCW representation, greater leadership, and accessible, authentic psychological wellbeing support services from workplace organisations and government. The pandemic has had significant impacts on senior doctors. The sustainability of the healthcare system requires interventions designed to protect workforce wellbeing
36. Olateju Z., Olufunlayo T., MacArthur C., Leung C., Taylor B. Community health workers experiences and perceptions of working during the COVID-19 pandemic in Lagos, Nigeria-A qualitative study PLoS ONE 2022 17:3 March 2022	Exclusion for context (LMIC, Lagos)	
37. Chen X., Lin F., Cheng E.W. Stratified Impacts of the Infodemic During the COVID-19 Pandemic: Cross-sectional Survey in 6 Asian Jurisdictions Journal of Medical Internet Research 2022 24:	Exclusion for population: Asian residents and scope: infodemic	



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38. Hospital-Based Healthcare Worker Perceptions of Personal Risk Related to COVID-19: One Year Follow-Up Yamane D., Zarabian K., Devine K., Benjenk I., Farrar K., Park O.L., Kim J., Davison D., Heinz E. Journal of the American Board of Family Medicine 2022 35:2 (284-294)	Exclusion for population: Focus on HCW across care specialties in an academic medical system	
39. Halcomb E., Fernandez R., Mursa R., Stephen C., Calma K., Ashley C., McInnes S., Desborough J., James S., Williams A. Mental health, safety and support during COVID-19: A cross-sectional study of primary health care nurses Journal of nursing management 2022 30:2 (393-40)	Duplicate	
40. Blattner K., Miller R., Smith M., Lander J. Doing without the residential component of a blended postgraduate rural medical programme during the 2020 COVID-19 pandemic in New Zealand: student perspectives Education for primary care : an official publication of the Association of Course Organisers, National Association of GP Tutors, World Organisation of Family Doctors 2022 33:2 (77-84)	Exclusion for population: postgraduate training students	
41. Mascayano F., van der Ven E., Moro M.F., Schilling S., Alarcón S., Al Barathie J., Alnasser L., Asaoka H., Ayinde O., Balalian A.A., Basagoitia A., Brittain K., Dohrenwend B., Durand-Arias S., Eskin M., Fernández-Jiménez E., Freytes Frey M.I., Giménez L., Gisle L., Hoek H.W., Jaldo R.E., Lindert J., Maldonado H., Martínez-Alés G., Martínez-Viciano C., Mediavilla R., McCormack C., Myer L., Narvaez J., Nishi D., Ouali U., Puac-Polanco V., Ramírez J., Restrepo-Henao A., Rivera-Segarra E., Rodríguez A.M., Saab D., Seblova D., Tenorio Correia da Silva A., Valeri L., Alvarado R., Susser E. The impact of the COVID-19 pandemic on the mental health of healthcare workers: study protocol for the COVID-19 HEalth caRe wOrkErS (HEROES) study	Duplicate Protocol	



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Social psychiatry and psychiatric epidemiology 2022 57:3 (633-645)		
42. Darley S., Coulson T., Peek N., Moschogianis S., van der Veer S.N., Wong D.C., Brown B.C. Understanding how the design and implementation of Online Consultations influence primary care outcomes: Systematic review of evidence with recommendations for designers, providers, and researchers Preprint. medRxiv 2022	Inclusion? Exclusion based on full text for design (preprint) and scope : Focus on the impact of online consultation in primary care.	Review : search in Ovid Medline, Embase, Web of Science, Scopus, NTIS, HMIC, and ZETOC from 2010 to November 2021. QA. 62 studies included in 9 countries: 26 in 2020 onwards and 11 post-COVID-19. Safe and positive outcomes (increased access to PC and decreased patient costs- but also conflicting outcomes regarding provider costs, workload, patient satisfaction and equitable care. Further engineering and implementation research is required to realize their full benefits.
43. Schaffler-Schaden D., Mergenthal K., Avian A., Huter S., Spary-Kainz U., Bachler H., Flamm M., Siebenhofer A. COVI-Prim Longitudinal Survey: Experiences of Primary Care Physicians During the Early Phase of the COVID-19 Pandemic. [In Process] Frontiers in Medicine 2022 9	Duplicate	
44. Coenen L., Poel L.V., Schoenmakers B., Van Renterghem A., Gielis G., Remmen R., Michels N.R. The impact of COVID-19 on the well-being, education and clinical practice of general practice trainees and trainers: a national cross-sectional study BMC medical education 2022 22:1 (108-)	Inclusion Inclusion based on full text	National cross-sectional study with online survey to GP trainers and trainees in Belgium (Flanders)
45. AACR Report on the Impact of COVID-19 on Cancer Research and Patient Care Clinical Cancer Research 2022 28:4 (609-610)	Exclusion for population: cancer patients	The AACR Report on the Impact of COVID-19 on Cancer Research and Patient Care (https://www.aacr.org/professionals/research/aacr-covid-19-and-cancer-report-2022/) is one of these initiatives that presents current evidence on the burden of COVID-19 among patients with cancer and highlights the challenges as well as future opportunities created by the pandemic in cancer research and patient care.
46. Hanna K., Giebel C., Cannon J., Shenton J., Mason S., Tetlow H., Marlow P., Rajagopal M., Gabbay M. Working in a care home during the COVID-19 pandemic: How has the pandemic changed working practices? A qualitative study. BMC geriatrics 2022 22:1 (129-	Exclusion for population: no GPS but care home staff	



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47. Lawler M., Crul M. Data must underpin our response to the covid-19 pandemic's disastrous impact on cancer The BMJ 2022 376 Article Number o28	Exclusion for population: cancer patients and cancer services	
48. McGorry P.D., Mei C., Chanen A., Hodges C., Alvarez-Jimenez M., Killackey E. Designing and scaling up integrated youth mental health care World Psychiatry 2022 21:1 (61-76)	Duplicate	
50. The experience of European hospital-based health care workers on following infection prevention and control procedures and their wellbeing during the first wave of the COVID-19 pandemic van Hout D., Hutchinson P., Wanat M., Pilbeam C., Goossens H., Anthierens S., Tonkin-Crine S., Gobat N. PLoS ONE 2022 17:2 February Article Numbe	Exclusion for population: hospital-based HCW	
51. Jarvis H., Roberts L. As practice evolves, are consultants and advanced practitioners considered clinical academics? Physiotherapy (United Kingdom) 2022 114 Supplement 1 (e127-e128)	Exclusion for population: consultants, advanced practitioners and managers	
52. Bater Z., Sellars J. What are musculoskeletal first contact practitioners experiences of clinical models of practice in primary care? - A descriptive survey. Physiotherapy (United Kingdom) 2022 114 Supplement 1 (e40-e41)	Exclusion for population: Focus on the First Contact Practitioner (FCP) role for patients with MSK troubles in primary care	
53. Harrison M., Tanner M. Delivering a first contact practitioner service in East London during a global pandemic. Physiotherapy (United Kingdom) 2022 114 Supplement 1 (e131-e132)	Exclusion for population: Focus on the First Contact Practitioner (FCP)	



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54. Eggleton K., Bui N., Goodyear-Smith F. COVID-19 impact on New Zealand general practice: rural-urban differences. Rural and remote health 2022 22:1 (7185-)	Duplicate	
55. Jefferson L., Heathcote C., Bloor K. General practitioner wellbeing during the COVID-19 pandemic: a qualitative interview study. medRxiv 2022	Inclusion? Inclusion	40 GPs interviewed; most described generally negative sentiment and many displayed signs of psychological distress and burnout. Causes of stress and anxiety related to personal risk, workload, practice changes, public perceptions and leadership, teamworking and wider collaboration and personal challenges. GPs described facilitators of their wellbeing, including sources of support and plans to reduce clinical hours or change career path. Conclusions A range of factors detrimentally affected the wellbeing of GPs during the pandemic and we highlight the potential impact of this on workforce retention and quality of care
56. Pathman D.E., Sonis J., Harrison J.N., Sewell R.G., Fannell J., Overbeck M., Konrad T.R. Experiences of Safety-Net Practice Clinicians Participating in the National Health Service Corps During the COVID-19 Pandemic. Public Health Reports 2022 137:1 (149-162)	Inclusion? Exclusion based on full text for population: mix of clinicians: Nurse practitioners (24.7%), physicians (15.1%) and dentists (12.3%). No subgroup analysis for GPs	Data of 3886 clinicians; 1890 participants (44.3%) Three-quarters (76.6%) of all NHSC clinicians had a Well-Being Index value ≥ 2 (indicating being at risk for mental distress). On the positive side, 84.0% of NHSC clinicians reported that they found work meaningful during the previous month, and 71.6% reported that they were satisfied or very satisfied with feelings of accomplishment in their work during the pandemic. 75.9% reported feeling burned out from their work; 66.2% reported being bothered by emotional problems such as feeling anxious, depressed, and irritable; 61.2% worried that work was hardening them emotionally; and 47.3% felt bothered by emotional problems such as feeling down, depressed, or hopeless. Among the 3 discipline groups, dental clinicians were least likely to respond yes on 5 of the items.
57. Smaling H.J.A., Tilburgs B., Achterberg W.P., Visser M. The Impact of Social Distancing Due to the COVID-19 Pandemic on People with Dementia, Family Carers and Healthcare Professionals: A Qualitative Study. International Journal of Environmental Research and Public Health 2022 19:1 Article Number 519	Exclusion for population: Focus on home care and Long term care home and social distancing	



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58. Rivera-Núñez Z., Jimenez M.E., Crabtree B.F., Hill D., Pellerano M.B., Devance D., Macenat M., Lima D., Gordon M., Sullivan B., Rosati R.J., Ferrante J.M., Barrett E.S., Blaser M.J., Panettieri R.A., Hudson S.V. Experiences of Black and Latinx health care workers in support roles during the COVID-19 pandemic: A qualitative study. PLoS ONE 2022 17:1 January Article Number e0262606	Exclusion for population: Focus on very specific subgroup of HCW (minorities)	
59. Zhou A.Y., Panagioti M., Hann M., Agius R., Van Tongeren M., Esmail A., Bower P. Contributors to stress and burnout in junior doctors during the COVID-19 pandemic. Safety and Health at Work 2022 13 Supplement (S294-S295)	Exclusion for design (abstract only and full text available in another publication by the same author) See 67	Online survey : 326 responses. In conclusion, junior doctors reported a combination of general and pandemic-specific stressors that significantly impact burnout. Monitoring these stressors and targeting them as part of interventions could help mitigate burnout in junior doctors.
60. Caney S.M.A., Robinson N.J., Gunn-Moore D.A., Dean R.S. Veterinary surgeons', veterinary nurses' and owners' experiences of feline telemedicine consultations during the 2020 COVID-19 pandemic. [In Process] Veterinary Record 2022	Exclusion for population: veterinary	
61. Yassin A., Al-Mistarehi A.-H., Qarqash A.A., Soudah O., Karasneh R.A., Al-Azzam S., Khasawneh A.G., El-Salem K., Kheirallah K.A., Khassawneh B.Y. Trends in Insomnia, Burnout, and Functional Impairment among Health Care Providers over the First Year of the COVID-19 Pandemic. [In Process] Clinical Practice and Epidemiology in Mental Health 2022 18 (1-20) Article Number e174501792206200	Exclusion for context and population: Jordan HCW, no results specific for GPs	
62. Mota Romero E., Puente Fernández D., Rodríguez Pertíñez C., Árbol Fernández G., Moreno Guerrero S., Montoya Juárez R. Inadequate human resources, equipment and training: A qualitative assessment of the objectives of the NUHELP	Duplicate	



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end-of-life care programme in the context of the COVID-19 pandemic Palliative Medicine 2022		
63. Smith R.W., Tween S., Chamberlain C., Gibbins J. Acute hospital specialist palliative care: Multidisciplinary team models and workforce in South West England. BMJ Supportive and Palliative Care 2022 Article Number 003813	Exclusion for population: Focus on acute hospital specialist palliative care teams (SPCTs)	
64. Clyne B., Hynes L., Kirwan C., McGeehan M., Byrne P., Killilea M., Smith S.M., Ryan M., Collins C., O'Neill M., Wallace E., Murphy A.W., Kelly M.E. Perspectives on the production, and use, of rapid evidence in decision making during the COVID-19 pandemic: A qualitative study. BMJ Evidence-Based Medicine 2022 Article Number e111905	Exclusion for population: Focus on evidence providers and users, not on GPs daily clinical practices	
65 Zlotos L., Stewart F. Measuring the evolution of online pharmacy education in a national CPD programme, in Scotland, pre-pandemic (2013-14 vs 2018-19). Education for primary care : an official publication of the Association of Course Organisers, National Association of GP Tutors, World Organisation of Family Doctors 2022 33:1 (46-52)	Exclusion for population: Focus on continuing professional development (CPD) staff.	
66. Byun H., Westfall J.M. Family Medicine and Emergency Redeployment: Unrealized Potential. Family medicine 2022 54:1 (44-46)	Duplicate	
67. Zhou A.Y., Hann M., Panagioti M., Patel M., Agius R., Van Tongeren M., Esmail A., Bower P. Cross-sectional study exploring the association between stressors and burnout in junior doctors during the COVID-19 pandemic in the United Kingdom. Journal of occupational health 2022 64:1 (e12311-	Inclusion? Inclusion based on full test despite focus on very specific subgroup of HCW (junior doctors) Also n°59	



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68. Kelly E.L., Cunningham A., Sifri R., Pando O., Smith K., Arenson C. Burnout and Commitment to Primary Care: Lessons From the Early Impacts of COVID-19 on the Workplace Stress of Primary Care Practice Teams Annals of family medicine 2022 20:1 (57-62)	Duplicate	
69. Xu E., Kim P., Yee C., Zhang M., Reckrey J., Lubetsky S., Ornstein K., Franzosa E. "I depend on her for everything": A mixed-methods analysis of the role of home care workers caring for medically and socially complex patients during the COVID-19 pandemic Epidemiology 2022 70:SUPPL 1 (S301-)	Exclusion for population: Focus on patients needing home care workers	
70. Damier S., Tewary S., Pandya N., Cook N., Dezine M., Bommanaveni A. Use of Tablets to Improve Telehealth Services Among Older Adults Epidemiology 2022 70:SUPPL 1 (S168-)	Exclusion for population: Focus on support for vulnerable older adults	
71. Shah S.S., Safa A., Johal K., Obika D., Valentine S. A prospective observational real world feasibility study assessing the role of app-based remote patient monitoring in reducing primary care clinician workload during the COVID pandemic BMC family practice 2021 22:1 (248-)	Duplicate	
72. Amimo F., Lambert B., Magit A., Hashizume M. A review of prospective pathways and impacts of COVID-19 on the accessibility, safety, quality, and affordability of essential medicines and vaccines for universal health coverage in Africa Globalization and Health 2021 17:1 Article Number 42	Exclusion for context and scope: Focus on access to medicines and vaccines in Africa	



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73. Burton A., Rapaport P., Palomo M., Lord K., Budgett J., Barber J., Hunter R., Butler L., Vickerstaff J., Rockwood K., Ogden M., Smith D., Lang I., Livingston G., Dow B., Kales H., Manthorpe J., Walters K., Hoe J., Orgeta V., Samus Q., Cooper C. Clinical and cost-effectiveness of a New psychosocial intervention to support Independence in Dementia (NIDUS-family) for family carers and people living with dementia in their own homes: a randomised controlled trial Trials 2021 22:1 Article Number 865	Exclusion for population: Focus on family carers and people living with dementia	
74. Borek A.J., Maitland K., McLeod M., Campbell A., Hayhoe B., Butler C.C., Morrell L., Roope L.S.J., Holmes A., Walker A.S., Tonkin-Crine S. Impact of the covid-19 pandemic on community antibiotic prescribing and stewardship: A qualitative interview study with general practitioners in england Antibiotics 2021 10:12 Article Number 1531	Exclusion for outcome: Antibiotics prescription and antimicrobial stewardship	
75. Spiers J., Buszewicz M., Chew-Graham C., Dunning A., Taylor A.K., Gopfert A., Van Hove M., Teoh K.R.-H., Appleby L., Martin J., Riley R. What challenges did junior doctors face while working during the COVID-19 pandemic? A qualitative study BMJ Open 2021 11:12 Article Number e056122	Exclusion for scope (challenge during the first part of the pandemic) and population: focus on all kind of junior doctors (not GP specific, verified in Full text)	Junior doctor' is the term given to qualified doctors who are still in training while working. They may have 8 or more years of experience, depending on their specialty.
76. Chan L.G., Tan P.L.L., Sim K., Tan M.Y., Goh K.H., Su P.Q., Tan A.K.H., Lee E.S., Tan S.Y., Lim W.P., Aw C.H., Goh Y.Z., Sadarangani S., Chow A. Psychological impact of repeated epidemic exposure on healthcare workers: Findings from an online survey of a healthcare workforce exposed to both SARS (severe acute respiratory syndrome) and COVID-19 BMJ Open 2021 11:11 Article Number e051895	Duplicate	



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77. Anjum M.R., Chalmers J., Hamid R., Rajoriya N. COVID-19: Effect on gastroenterology and hepatology service provision and training: Lessons learnt and planning for the future World Journal of Gastroenterology 2021 27:44 (7625-7648)	Exclusion for context and population: gastroenterology and hepatology services in China	
78. Kang E., Lee H., Sohn J.H., Yun J., Lee J.Y., Hong Y.-C. Impact of the COVID-19 Pandemic on the Health Status and Behaviors of Adults in Korea: National Cross-sectional Web-Based Self-report Survey JMIR public health and surveillance 2021 7:11 (e31635-)	Exclusion for outcome: health status and behavior in Korean adults	
79. Fernández-Aguilar C., Casado-Aranda L.-A., Farrés Fernández M., Minué Lorenzo S. Has COVID-19 changed the workload for primary care physicians? The case of Spain Family practice 2021 38:6 (780-785)	Duplicate	
80. Borek A.J., Maitland K., McLeod M., Campbell A., Hayhoe B., Butler C.C., Morrell L., Roope L., Holmes A., Walker A.S., Tonkin-Crine S., Anyanwu P.E., Borek A.J., Bright N., Buchanan J., Butler C.C., Campbell A., Costelloe C., Hayhoe B., Holmes A., Hopkins S., Majeed A., McLeod M., Moore M., Morrell L., Pouwels K.B., Robotham J.V., Roope L.S.J., Tonkin-Crine S., Walker A.S., Wordsworth S., Wright C., Yadav S., Zalevski A. Impact of the COVID-19 pandemic on community antibiotic prescribing and stewardship: A qualitative interview study with general practitioners in England medRxiv 2021	Duplicate n 74	
81. Shaping the Future of Social Work Practice in Healthcare: Addressing COVID-19 Needs through Integrated Primary Care Dennelly L., Sousa C., Roberts K. Social work 2021	Duplicate	



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82. Manouchehri M., Bhamra S.K., Fernández-Alfonso M.S., Gil-Ortega M. The real impact of COVID-19 on community pharmacy professionals as part of the primary health care frontier workforce in Spain Journal of Pharmacy and Pharmacognosy Research 2021 9:6 (878-891)	Exclusion for population: focus on community pharmacy teams	
83. Borman A.M., Fraser M., Patterson Z., McLachlan S., Palmer M.D., Mann C., Oliver D., Brown P., Linton C.J., Dziecnyk A., Hedley M., Gough M., Johnson E.M. The considerable impact of the SARS-CoV-2 pandemic and COVID-19 on the UK National Mycology Reference Laboratory activities and workload. Medical Mycology 2021 59:11 (1068-1075)	Duplicate	
84. O'Malley D.M., Alfano C.M., Doose M., Kinney A.Y., Lee S.J.C., Nekhlyudov L., Duberstein P., Hudson S.V. Cancer prevention, risk reduction, and control: Opportunities for the next decade of health care delivery research Translational Behavioral Medicine 2021 11:11 (1989-1997)	Exclusion for scope: focus on cancer (commentary)	
85. Junqueira V. The Challenge of Spreading Knowledge about Childhood Cancer during the Covid-19 Pandemic - The Experience of Online Training Pediatric Blood and Cancer 2021 68:SUPPL 5	Exclusion for scope: focus on an online training in paediatric cancer	
86. Kourti M., Baka M., Moschovi M., Polychronopoulou S., Narechem-St G., Ntzani E., Petridou E. First Wave of Covid-19 Pandemic and Health Care Delivery in Greece: Results from the Nationwide Registry of Childhood Hematological Malignancies and Solid Tumors (NARECHEM-ST) Pediatric Blood and Cancer 2021 68:SUPPL 5	Exclusion for scope: focus on paediatric cancer epidemiology and impact of the lockdown /first wave	Treating physicians reported high burden of extra administrative work load and voluntary training of families in tele-medical support.



References	Inclusion or Exclusion	Conclusion and Comments
87. Rutter C., Phillips C., Nagamootoo D., O'Hare S., Newbery N., Trudgill N. The state of the gastroenterology and hepatology consultant workforce in 2020 Gut 2021 70:SUPPL 4 (A19-)	Exclusion for population: focus on gastroenterology and hepatology consultant workforce	
88. Raja L., Wagner S., Kayal A., Pedersen M., Keane P., Sim D. Improving digital competency of ophthalmic clinicians and allied health professionals Ophthalmologica 2021 244:SUPPL 1	Exclusion for population: focus on ophthalmic clinicians and allied health professionals	
89. Zhang T., Shen X., Liu R., Zhao L., Wang D., Lambert H., Cabral C. The impact of COVID-19 on primary health care and antibiotic prescribing in rural China: qualitative study BMC health services research 2021 21:1 (1048-)	Duplicate	
90. Brown-Johnson C., McCaa M.D., Giannitrapani S., Singer S.J., Lorenz K.A., Yano E.M., Thanassi W.T., Deshields C., Giannitrapani K.F. Protecting the healthcare workforce during COVID-19: A qualitative needs assessment of employee occupational health in the US national Veterans Health Administration BMJ Open 2021 11:10 Article Number e049134	Exclusion for population: focus on employee occupational health in the US national Veterans Health Administration	
91. Knapp K.M., Courtier N. The future role of radiographers Radiography 2021 27 Supplement 1 (S1-S2)	Exclusion for population: focus on radiographers	
92. Naslund J.A., Tugnawat D., Anand A., Joshi U., Khan A., Muke S., Restivo J.L., Shrivastava R., Singh A., Bhan A., Patel V. 20.3 Remote coaching and technology for training community health workers to treat depression in primary care: case example from India and opportunities to scale up mental health care globally.	Exclusion for context and scope: LMIC and management of depression	



References	Inclusion or Exclusion	Conclusion and Comments
Journal of the American Academy of Child and Adolescent Psychiatry 2021 60:10 Supplement (S288-S289)		
93. Herber-Valdez C., Kupesic-Plavsic S. Satisfaction and Shortfall of OB-GYN Physicians and Radiologists Donald School Journal of Ultrasound in Obstetrics and Gynecology 2021 15:4 (387-392)	Exclusion for population: focus on OB-GYN Physicians and Radiologists	
94. Chang Y.-T., Chiang S.-C., Lee W.-C., Chen T.-J., Hwang S.-J. Varied impacts on outpatient services among departments and divisions in the early phase of the COVID-19 pandemic: Implications for personnel mobilization and preparatory training Journal of the Chinese Medical Association : JCMS 2021 84:10 (951-955)	Exclusion for population and context : focus on outpatient visits at Taipei Veterans General Hospital in Taiwan	
95. Campbell C., Sommerfield T., Clark G.R.C., Porteous L., Milne A.M., Millar R., Syme T., Thomson C.S. COVID-19 and cancer screening in Scotland: A national and coordinated approach to minimising harm. Preventive medicine 2021 151 (106606-)	Exclusion for outcomes: impact on cancer screening programmes and services	
96. Scholz M., Schriefer D., Voigt I., Dillenseger A., Ziemssen T. The impact of the COVID-19 pandemic on people with multiple sclerosis: A longitudinal survey study Multiple Sclerosis Journal 2021 27:2 SUPPL (304-)	Exclusion for outcomes: focus on health status, healthcare resource use, etc. of people with multiple sclerosis in Germany	19.2% consulted their primary care physician less frequently
97. Kovac G. The impact of the covid pandemic on the pedagogical activities of the institute of chemistry, clinical chemistry and laboratory medicine of the slovak medical university Clinical Chemistry and Laboratory Medicine 2021 59:SUPPL 1 (S358-S359)	Exclusion for scope: focus on pedagogical activities of an institute of chemistry, clinical chemistry and laboratory medicine	



References	Inclusion or Exclusion	Conclusion and Comments
98. Kelly E.L., Casola A.R., Smith K., Kelly S., de la Cruz M.S.D. A qualitative analysis of third-year medical students' reflection essays regarding the impact of COVID-19 on their education BMC medical education 2021 21:1 (481-)	Duplicate	
99. Cavalieri S., Spinetta M., Zagaria D., Franchi M., Lavazza G., Nardelli F., Serafini A., Leone R., Messina A., Arpaia F., Buccimazza G., Carriero S., D'Angelo F., Stellato E., Giuri G., Balbi M., Preziosa G.C., Parolise M., Pessina C., Romano S., Curti M., Capra D. The impact of COVID-19 pandemic on radiology residents in Northern Italy European Radiology 2021 31:9 (7077-7087)	Exclusion for population: focus on radiology residents	
100. Seda-Gombau G., Montero-Alfá J.J., Moreno-Gabriel E., Torán-Monserrat P. Impact of the covid-19 pandemic on burnout in primary care physicians in catalonia International Journal of Environmental Research and Public Health 2021 18:17 Article Number 9031	Inclusion? Inclusion based on full-text.	The COVID-19 pandemic has pushed burnout in primary care professionals to the edge
101. Singh M.K., Gullett H.L., Thomas P.A. Using Kern's 6-Step Approach to Integrate Health Systems Science Curricula Into Medical Education Academic medicine : journal of the Association of American Medical Colleges 2021 96:9 (1282-1290)	Exclusion for outcome: focus on medical education	
102. Ashley C., James S., Williams A., Calma K., Mcinnes S., Mursa R., Stephen C., Halcomb E. The psychological well-being of primary healthcare nurses during COVID-19: A qualitative study Journal of advanced nursing 2021 77:9 (3820-3828)	Exclusion for population: focus on PHC nurses	



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103. Amos O.A., Adebisi Y.A., Bamisaiye A., Olayemi A.H., Ilesanmi E.B., Micheal A.I., Ekpenyong A., Lucero-Prisno D.E. COVID-19 and progress towards achieving universal health coverage in Africa: A case of Nigeria The International journal of health planning and management 2021 36:5 (1417-1422)	Duplicate	
104. Ng C., Saini N., Ho T., Chan H. An audit on rheumatology clinic referrals during Covid-19 pandemic 2020 -a single hospital experience in Malaysia International Journal of Rheumatic Diseases 2021 24:SUPPL 2 (173-174)	Exclusion for population and context: focus on rheumatology clinic referrals in Malaysia	
105. Kelley L., Ho M., Zanetti C., McKeever M., Na S., Showell S., Fehling K., Kenney R. Primary care evolution: Clinic staff and patient perspectives of the rapid upscale of virtual primary care during the COVID-19 pandemic Health Services Research 2021 56:SUPPL 2 (32-)	Exclusion for scope: focus on virtual care (not on COVID) impact on primary care clinic staff (qualitative study in US)	Primary care clinic staff perceive virtual care as providing the same or higher quality of care, efficiency and patient-centeredness when compared to face-to face but remain concerned about potential unintended consequences of the rapid scale up of virtual care implementation.
106. Edelman A., Marten R., Montenegro H., Sheikh K., Barkley S., Ghaffar A., Dalil S., Topp S.M. Modified scoping review of the enablers and barriers to implementing primary health care in the COVID-19 context Health policy and planning 2021 36:7 (1163-1186)	Duplicate	
107. Mehta K., Zodpey S., Banerjee P., Pocius S.L., Dhaliwal B.K., DeLuca A., Bhattacharya S.D., Hegde S., Sengupta P., Gupta M., Shet A. Shifting research priorities in maternal and child health in the COVID-19 pandemic era in India: A renewed focus on systems strengthening PLoS ONE 2021 16:8 August Article Number e0256099	Duplicate	



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108. Archer S., Calanzani N., Honey S., Johnson M., Neal R., Scott S.E., Walter F.M. Impact of the COVID-19 pandemic on cancer assessment in primary care: a qualitative study of GP views BJGP Open 2021 5:4 (1-11)	Inclusion? Inclusion based on full text Objective: To understand GPs' views on the impact of the COVID-19 pandemic on the clinical assessment of possible cancer	Recommendations are made to inform safe and effective primary care clinical practice. Urgent action is needed to mitigate the impact of the COVID-19 pandemic, and ensure appropriate symptomatic assessment now and in the future
109. Lum A., Goh Y.-L., Wong K.S., Seah J., Teo G., Ng J.Q., Abdin E., Hendricks M.M., Tham J., Nan W., Fung D. Impact of COVID-19 on the mental health of Singaporean GPs: a cross-sectional study BJGP Open 2021 5:4 (1-14)	Exclusion for context : focus on Singaporean GPs mental health.	Prevalence of anxiety, burnout, and depression were found to be higher than those reported pre-COVID-1
110. Stocker R, Russell S, Liddle J, Barker RO, Remmer A, Gray J, Hanratty B, Adamson J. Experiences of a National Early Warning Score (NEWS) intervention in care homes during the COVID-19 pandemic: A qualitative interview study [In Process] BMJ Open 2021 11:7 Article Number 045469	Duplicate	
111. S Nnaji C.A., Wiysonge C.S., Lesosky M., Mahomed H., Ndwandwe D. Covid-19 and the gaping wounds of south africa's suboptimal immunisation coverage: An implementation research imperative for assessing and addressing missed opportunities for vaccination Vaccines 2021 9:7 Article Number 691	Exclusion for scope and context: focus on vaccination in South Africa	
112. Novak H., Tadić I., Falamić S., Ortner Hadžiabdić M. Pharmacists' role, work practices, and safety measures against COVID-19: A comparative study Journal of the American Pharmacists Association 2021 61:4 (398-407)	Exclusion for population: focus on pharmacists	
113. Jonnagaddala J., Godinho M.A., Liaw S.-T. From telehealth to virtual primary care in Australia? A Rapid scoping review	Duplicate	



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International Journal of Medical Informatics 2021 151 Article Number 104470		
114. Collins R. Protect the nurse, protect the practice: Effective communication is the foundation for keeping nurses safe Healthcare Management Forum 2021 34:4 (200-204)	Exclusion for population: focus on nurses	
115. Fernando S., Mohamedbhai H., Visavadia B. P-233 An Atypical Head and Neck On-Call Week During the COVID-19 Pandemic: The Shape of Things to Come? Oral Oncology 2021 118 Supplement (10-)	Exclusion for population: focus on cancer presentation in a regional oral and maxillofacial surgery (OMFS) unit	Changes to primary care services during the pandemic (dental and general practice) with less face-to-face consultations may be a contributing factor in these delays.
116. Fahy N., Hervey T., Dayan M., Flear M., Galsworthy M., Greer S., Jarman H., McKee M. Assessing the potential impact on health of the UK's future relationship agreement with the EU: Analysis of the negotiating positions Health Economics, Policy and Law 2021 16:3 (290-307)	Exclusion for scope: focus on Brexit impact	
117. Steidtmann D., McBride S., Mishkind M.C. Experiences of Mental Health Clinicians and Staff in Rapidly Converting to Full-Time Telemental Health and Work from Home During the COVID-19 Pandemic Telemedicine journal and e-health : the official journal of the American Telemedicine Association 2021 27:7 (785-791)	Exclusion for population: focus on mental health clinicians and staff	
118. Taggar J., Saha R., Hopwood-Carr P., Patel B., Johnson C. Clinical placements in General Practice: concepts and considerations of implementing remote virtual placements in the COVID world Education for primary care : an official publication of the Association of Course Organisers, National Association of GP Tutors, World Organisation of Family Doctors 2021 32:4 (237-244)	Duplicate	



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119. Ten Cate O., Schultz K., Frank J.R., Hennis M.P., Ross S., Schumacher D.J., Snell L.S., Whelan A.J., Young J.Q. Questioning medical competence: Should the Covid-19 crisis affect the goals of medical education? Medical teacher 2021 43:7 (817-823)	Inclusion? Exclusion based on full text for population: focus on global medical competences, not specific for GPs.	Discussion from The Netherlands Members of the International Competency-based Medical Education (ICBME) Collaborators Early in the pandemic (Paper written in winter 2020) Because of the massive redeployment of medical and other health professionals, need of medical competence through the lens of adaptability.
120. Huang H.-L., Jan C.-F.J., Bih-Jeng Chang B., Chiu T.-Y. Factors influencing the willingness of primary care physicians to provide care during the coronavirus disease pandemic: A nationwide survey in Taiwan BMJ Open 2021 11:7 Article Number e049148	Duplicate	
121. Ingram S. How a pandemic changed advanced nurse practitioner (ANP) chest pain assessment from face-to-face to virtual: The impact on clinical workload, diagnosis & patient safety European Journal of Cardiovascular Nursing 2021 20:SUPPL 1 (i118-)	Exclusion for population: focus on advanced nurse providers	
122. Moey P.K.S., Ang A.T.W., Ee A.G.L., Ng D.C.C., Ng M.C.W., Teo S.S.H., Tay E.G., Tan N.C. What are the measures taken to prevent COVID-19 infection among healthcare workers? A retrospective study in a cluster of primary care clinics in Singapore BMJ Open 2021 11:6 Article Number e049190	Duplicate	
123. O'Rielly C., Ng-Kamstra J., Kania-Richmond A., Dort J., White J., Robert J., Brindle M., Sauro K. Surgery and COVID-19: A rapid scoping review of the impact of the first wave of COVID-19 on surgical services BMJ Open 2021 11:6 Article Number e043966	Duplicate	



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124. Jammu A.S., Chasen M.R., Lofters A.K., Bhargava R. Systematic rapid living review of the impact of the COVID-19 pandemic on cancer survivors: update to August 27, 2020 Supportive Care in Cancer 2021 29:6 (2841-2850)	Exclusion for outcome: focus on cancer survivorship during and just after the first wave	
125. Babicki M., Szewczykowska I., Mastalerz-Migas A. The mental well-being of health care workers during the peak of the covid-19 pandemic—a nationwide study in poland International Journal of Environmental Research and Public Health 2021	Inclusion? Exclusion based on full text for population: focus on all kind of HCWs.	The COVID-19 pandemic has had a significant impact on mental deterioration among health professionals in Poland, especially among those directly working with SARS-CoV-2-infected patients and those who were forcibly seconded to work with such patients. To mitigate the effects of the pandemic, appropriate psychological care for medical personnel needs to be implemented.
126. Freeman D., Loe B.S., Yu L.-M., Freeman J., Chadwick A., Vaccari C., Shanyinde M., Harris V., Waite F., Rosebrock L., Petit A., Vanderslott S., Lewandowsky S., Larkin M., Innocenti S., Pollard A.J., McShane H., Lambe S. Effects of different types of written vaccination information on COVID-19 vaccine hesitancy in the UK (OCEANS-III): a single-blind, parallel-group, randomised controlled trial The Lancet Public Health 2021 6:6 (e416-e427)	Exclusion for scope: focus on vaccination	
127. Matthewman S., Spencer S., Lavergne M.R., McCracken R.K., Hedden L. An environmental scan of virtual "walk-in" clinics in canada: Comparative study Journal of Medical Internet Research 2021 23:6 Article Number e27259	Duplicate	
128. Anderson M., O'Neill C., Macleod Clark J., Street A., Woods M., Johnston-Webber C., Charlesworth A., Whyte M., Foster M., Majeed A., Pitchforth E., Mossialos E., Asaria M., McGuire A. Securing a sustainable and fit-for-purpose UK health and care workforce The Lancet 2021 397:10288 (1992-2011)	Duplicate	



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129. Anderson M., Pitchforth E., Asaria M., Brayne C., Casadei B., Charlesworth A., Coulter A., Franklin B.D., Donaldson C., Drummond M., Dunnell K., Foster M., Hussey R., Johnson P., Johnston-Webber C., Knapp M., Lavery G., Longley M., Clark J.M., Majeed A., McKee M., Newton J.N., O'Neill C., Raine R., Richards M., Sheikh A., Smith P., Street A., Taylor D., Watt R.G., Whyte M., Woods M., McGuire A., Mossialos E. LSE–Lancet Commission on the future of the NHS: re-laying the foundations for an equitable and efficient health and care service after COVID-19 The Lancet 2021 397:10288 (1915-1978)	Inclusion? Inclusion based on full text	Focus on NHS
130. Gaffney B., O'Carroll O., Conroy F., Butler M.W., Keane M.P., McCarthy C. The impact of COVID-19 on clinical education of internal medicine trainees Irish Journal of Medical Science 2021 190:2 (845-847)	Exclusion for population: clinical education of internal medicine trainees.	
131. Abdulla F., Nain Z., Karimuzzaman M., Hossain M.M., Rahman A. A non-linear biostatistical graphical modeling of preventive actions and healthcare factors in controlling covid-19 pandemic International Journal of Environmental Research and Public Health 2021 18:9 Article Number 4491	Exclusion for scope: focus on controlling pandemic	
132. Filippi M.K., Callen E., Wade A., Coffman M., Westfall J.M., Jabbarpour Y., Hester C.M., Carroll J. Covid-19 s financial impact on primary care clinicians and practices Journal of the American Board of Family Medicine 2021 34:3 (489-497)	Duplicate	



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133. Razzack A.A., Hussain N., Castellanos D.M.R., Paz M.F.P., Guntipalli P., Pakala R., Gara S.K., Agolli A., Agolli O., Hassan S.A. Trends in Accreditation Council for Graduate Medical Education-accredited pipeline programs and their impact on the future physician workforce Academic Emergency Medicine 2021 28:SUPPL 1 (S388-)	Inclusion? Exclusion for design (abstract only) and scope: focus on trends of residency program since 2010. From the SAEM21(Academic emergency medicine) No full-text publication	Increase in residency program. NB in the introduction; "The COVID-19 pandemic has reiterated the shortage of primary care physicians (PCP) to meet the demands of the US population in times of need. While the shortfall of physicians can be partially addressed by redeployment of other specialty trainees' for an acute period, it is important to recognize that there was a PCP shortage even before the outbreak emerged."
134. Konikkara J., Kabir A., David R., Donovan L., Palen B. Optimizing telehealth technology in sleep medicine at a VA medical center during the COVID19 pandemic Sleep 2021 44:SUPPL 2 (A257-A258)	Exclusion for outcome: focus on resource utilization in sleep medicine at a VA medical center	
135. Alrawashdeh H.M., Al-Tammemi A.B., Alzawahreh M.K., Al-Tamimi A., Elkholy M., Al Sarireh F., Abusamak M., Elehamer N.M.K., Malkawi A., Al-Dolat W., Abu-Ismaïl L., Al-Far A., Ghoul I. Occupational burnout and job satisfaction among physicians in times of COVID-19 crisis: a convergent parallel mixed-method study BMC public health 2021 21:1 (811-)	Duplicate	
136. Javed A., Lee C., Zakaria H., Buenaventura R.D., Cetkovich-Bakmas M., Duailibi K., Ng B., Ramy H., Saha G., Arifeen S., Elorza P.M., Ratnasingham P., Azeem M.W. Reducing the stigma of mental health disorders with a focus on low- and middle-income countries Asian Journal of Psychiatry 2021 58 Article Number 102601	Duplicate	
137. Kohn R., Brown M., Hasson C., Sheeran T., Stanton L., Nanda A., Bayer T. COVID-19 and Long-Term Care Healthcare Worker Mental Health in Rhode Island American Journal of Geriatric Psychiatry 2021 29:4 Supplement (S101-S102)	Exclusion for design (Protocol) and population: focus on healthcare workers in long-term care settings and group homes for the disabled	



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138. Vindrola-Padros C., Sidhu M.S., Georghiou T., Sherlaw-Johnson C., Singh K.E., Tomini S.M., Ellins J., Morris S., Fulop N.J. The implementation of remote home monitoring models during the COVID-19 pandemic in England EClinicalMedicine 2021 34 Article Number 100799	Exclusion for scope: focus on telemonitoring	
139. García D.T., Akinkugbe A.A., Mosavel M., Smith C.S., Brickhouse T.H. COVID-19 and Dental and Dental Hygiene Students' Career Plans JDR clinical and translational research 2021 6:2 (153-160)	Exclusion for population: focus on dental and dental hygiene students'	
140. Cabarkapa S., King J., Ng C. The psychiatric impact of COVID-19 on healthcare workers: A primary care approach Asia-Pacific Psychiatry 2021 13:SUPPL 1	Exclusion for design: abstract only (E-poster) From the Asia-Pacific Psychiatry Another full text found	The risks to the mental wellbeing of HCWs in the current pandemic are multifaceted. If unrecognized, they can lead to long-term psychological consequences. Psychiatric comorbidities can be triggered but can potentially be mitigated with appropriate measures. GPs play an important role in providing early interventions for HCWs who may experience adverse psychological outcomes. Through opportunistic screening for mental health disorders and timely consideration of psychosocial interventions and treatment in both psychological and pharmacological modalities, the burden on the mental health of the healthcare workforce can be lessened
Cabarkapa S., King J., Ng C. The psychiatric impact of COVID-19 on healthcare workers Aust J Gen Pract. 2020 Dec;49(12):791-795. doi: 10.31128/AJGP-07-20-5531.	Inclusion? Exclusion based on full text for design (discussion) and scope: focus on psychiatric impact on all HCW without subgroup analysis for GPs	Key points • Heightened fear and increased stress levels for HCWs • As frontline HCWs, it is essential that GPs have their own doctor • Psychosocial strategies are often useful, • GPs play an important role in caring for HCWs through proactive screening for mental health disorders and offering early intervention
141. Dobert R., Sibley A., Mustain C., Peretti J., Speight I. What matters for frail older adults during a global pandemic Journal of the American Geriatrics Society 2021 69:SUPPL 1 (S127-)	Exclusion for scope and population: focus on older adults management by discussing remotely what matter to them with the nursing home staff training.	



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142. O'Reilly-Jacob M., Perloff J. The Effect of Supervision Waivers on Practice: A Survey of Massachusetts Nurse Practitioners during the COVID-19 Pandemic Medical Care 2021 59:4 (283-287)	Duplicate	
143. Cubitt L.J., Im Y.R., Scott C.J., Jeynes L.C., Molyneux P.D. Beyond PPE: A mixed qualitative-quantitative study capturing the wider issues affecting doctors' well-being during the COVID-19 pandemic BMJ Open 2021 11:3 Article Number e050223	Exclusion for population: focus on hospital doctors.	
144. Balasubramanian M., Short S. The future health workforce: integrated solutions and models of care International Journal of Environmental Research and Public Health 2021 18:6 (1-4) Article Number 284	Inclusion? No abstract available Exclusion based on full text for design : editorial about the content of the journal issue.	Quoted a rapid review on workforce modelling but for dentists
145. Agarwal R., Hoskin J. Clinical supervision of physician associates (PAs) in primary care: Who, what and how is it done? Future Healthcare Journal 2021 8:1 (57-61)	Exclusion for scope: focus on supervision of physician associates.	Recent funding initiatives that encourage employment of PAs to aid the increasing demands in primary care,
146. Mitrani P., Cain S., Khan S., Myers K., Ramtekkar U., Roth D. An Expert Panel Discussion on the Current and Future State of Telepsychiatry for Children and Adolescents Journal of Child and Adolescent Psychopharmacology 2021 31:2 (137-143)	Exclusion for scope: focus on telehealth for children and ado.	
147. Essaid L., Toder S.D., Lawrence C.B., Orr C.J., Perry M.F., Seashore C.J. Primary care education during a global pandemic: implementation of telemedicine Pediatrics 2021 147:3 (974-975)	Exclusion for outcome: focus on medical education regarding telemedicine	



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148. Roberts N.J., McAlooney-Kocaman K., Welch L., Ray E., Lippiet K., Kelly C. Resilience, anxiety and depression in nurses working in respiratory areas during the COVID-19 pandemic Thorax 2021 76:SUPPL 1 (A70-)	Exclusion for population: focus on nurses	
149. Roberts N.J., McAlooney-Kocaman K., Welch L., Ray E., Lippiet K., Kelly C. Resilience, anxiety and depression in nurses working in respiratory areas during the COVID-19 pandemic Thorax 2021 76:SUPPL 1 (A70-)	Duplicate	
150. Brodie N., Perdomo J.E., Silberholz E.A. The dual pandemics of COVID-19 and racism: Impact on early childhood development and implications for physicians Current Opinion in Pediatrics 2021 33:1 (159-169)	Exclusion for scope : focus on disparities in children care due to racism	
151. Gemine R., Davies G.R., Tarrant S., Davies R.M., James M., Lewis K. Factors associated with work-related burnout in NHS staff during COVID-19: A cross-sectional mixed methods study BMJ Open 2021 11:1 Article Number bmjopen-2020-042591	Exclusion for population: focus on work-related burnout in all groups of 239 health service staff.	
152. De Kock J.H., Latham H.A., Leslie S.J., Grindle M., Munoz S.-A., Ellis L., Polson R., O'Malley C.M. A rapid review of the impact of COVID-19 on the mental health of healthcare workers: implications for supporting psychological well-being BMC public health 2021 21:1 (104-)	Duplicate	
153. Maraqa B., Nazzal Z., Zink T. Mixed Method Study to Explore Ethical Dilemmas and Health Care Workers' Willingness to Work Amid COVID-19 Pandemic in Palestine Frontiers in Medicine 2020 7 Article Number 576820	Exclusion for context and population: Focus on all kind of front-line HCW in Palestine	Almost 25% of surveyed HCWs were not willing to work during the pandemic



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154. Al Ghafri T., Al Ajmi F., Al Balushi L., Mohan Kurup P., Al Ghamari A., Al Balushi Z., Al Fahdi F., Al Lawati H., Al Hashmi S., Al Manji A., Al Sharji A. Responses to the pandemic covid-19 in primary health care in Oman: Muscat experience Oman Medical Journal 2021 36:1 (514-521)	Duplicate	
155. Powell P., Saggu R., Jones S., Clari M., Saraiva I., Hardavella G., Hansen K., Pinnock H. Discussing treatment burden Breathe 2021 17:1 (1-5) Article Number 200284	Exclusion for scope: focus on treatment and relation patient-HC provider in general	
156. Binsaleh N.K., Bazaid A.S., Aldarhami A., Sherwani S., Althomali O.W. Awareness and practice of covid-19 precautionary measures among healthcare professionals in Saudi Arabia Journal of Multidisciplinary Healthcare 2021 14 (1553-1560)	Exclusion for context and scope: focus on protection measures used by HCWs in Saudi Arabia during the first wave	
157. Hurley A., McMahon H.C., Pinder R., Matteucci P., Totty J. Characterising non-melanoma skin cancer undergoing surgical management during the COVID-19 pandemic European Journal of Surgical Oncology 2021 47:1 (e21-)	Exclusion for outcome: focus on non-melanoma skin cancer characteristics in surgical units	larger and more aggressive tumours
158. Visser J.T. Patterns of illness and injury on Antarctic research cruises, 2004–2019: A descriptive analysis Journal of Travel Medicine 2021 27:6	Exclusion for scope	
159. Rees K., Dunlop J.L., Patel-Abrahams S., Struthers H., McIntyre J.A. Primary healthcare workers at risk during COVID-19: An analysis of infections in HIV service providers in five districts of South Africa. South African Medical Journal 2021 111:4 (309-314)	Duplicate	



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160. Kathe N.J., Wani R.J. Determinants of covid-19 case fatality rate in the united states: Spatial analysis over one year of the pandemic Journal of Health Economics and Outcomes Research 2021 8:1 (51-62)	Exclusion for scope: focus on spatial analysis of COVID death in US	
161. Vanhaecht K., Seys D., Bruyneel L., Cox B., Kaesemans G., Cloet M., Van Den Broeck K., Cools O., De Witte A., Lowet K., Hellings J., Bilsen J., Lemmens G., Claes S. COVID-19 is having a destructive impact on health-care workers' mental well-being International Journal for Quality in Health Care 2021 33:1	Duplicate	
162. Dahn B., Kerr L., Nuthulaganti T., Massaquoi M., Subah M., Yaman A., Plyler C.M., Cancedda C., Marshall R.E., Marsh R.H. Liberia's first health workforce program strategy: Reflections and lessons learned Annals of Global Health 2021 87:1 Article Number 95	Duplicate	
163. Muchena K.C., Kalenga R. Adherence to anti-retroviral therapy during COVID-19 pandemic among adolescents born HIV-positive HIV and AIDS Review 2021 20:3 (166-172)	Exclusion for scope and context: focus on anti-retroviral therapy (ART) adherence among adolescents in Africa	
164. Ross A.M., Schneider S., Muneton-Castano Y.F., Caldas A.A., Boskey E.R. "You never stop being a social worker:" Experiences of pediatric hospital social workers during the acute phase of the COVID-19 pandemic Social work in health care 2021 60:1 (8-29)	Exclusion for population: focus on social worker	
165. Portoghese I., Meloni F., Galletta M., Piras I., D'Aloja E., Finco G., Campagna M. Concerns, Perceived Impact, Preparedness in Coronavirus Disease (COVID-19) Pandemic and Health Outcomes among Italian Physicians: A Cross-Sectional Study	Inclusion? Not sure that focus on GPs Exclusion based on full text for population: focus on all physician (only 15% participant are GPs, including trainers and family pediatricians)	Being concerned about being infected/infecting other people, carrying out new and unusual tasks, and witnessing colleagues crying at work were important risk factors for physicians' well-being.



References	Inclusion or Exclusion	Conclusion and Comments
Journal of primary care & community health 2021 12(21501327211000245)		
166. Alami H., Lehoux P., Fleet R., Fortin J.-P., Liu J., Attieh R., Cadeddu S.B.M., Abdoulaye Samri M., Savoldelli M., Ag Ahmed M.A. How Can Health Systems Better Prepare for the Next Pandemic? Lessons Learned From the Management of COVID-19 in Quebec (Canada) Frontiers in public health 2021 9 (671833-)	Inclusion	By providing recommendations for policy and practice from a learning health system perspective, this paper contributes to the groundwork required for interdisciplinary research and genuine policy discussions to help health systems better prepare for future pandemics.
167. Thadani A., Thomas B., Chen P., Christie I., Kadiyala H., Helmer D. Veterans' ambulatory care experience during COVID-19: How the pandemic impacted veterans' access to primary care? Journal of General Internal Medicine 2021 36:SUPPL 1 (S175-)	Exclusion for outcome: Ffcus on veteran perception of access to primary care in US.	
168. Gonzalez C.M., Hossain O. Lessons in hindsight from frontline physicians in COVID-19 epicenters Journal of General Internal Medicine 2021 36:SUPPL 1 (S151-)	Exclusion for population: focus on epicenters physicians	
169. Kurland S., Shen M.S., LaPolla F.W., Saunders E.F., Atchley D.S., Scher J., Gillespie C. Fighting the COVID-19 pandemic from the clinic-impact of the primary care provider Journal of General Internal Medicine 2021 36:SUPPL 1 (S42-S43)	Inclusion? Exclusion for design (abstract only, from the 2021 Annual Meeting of the Society of General Internal Medicine) and scope: focus on the hypothesize that PCPs contribute to healthier communities and decreased COVID-19 cases and mortality.	Use of 3 surrogate measures of PCP effectiveness: PCP rate (#PCPs/population), flu vaccination rate, and number of preventable hospital stays. All were positively correlated to with lower COVID-19 cases and deaths and higher self-reported mask adherence even after accounting for SES and environmental factors. <u>In US, there were an average of 55 Primary care physicians (PCP) per 100,000 population.</u>
170. Subasinghe A., Prathivadi P., Epstein D., Amos N., Raymond J., Mazza D. Prioritising essential clinical services (ECS) in general practice during the COVID-19 pandemic: A protocol for the evaluation of the Royal College of General Practitioners (RCGP) guidance for the Australian context	Exclusion for design (Procotol) and scope: focus on evaluation of a guidance in prioritizing essential service	



References	Inclusion or Exclusion	Conclusion and Comments
Australian Journal of Primary Health 2021 27:4 (xlix-)		
171. Holcombe R.F., Tom J., Morimoto M., Wright E., Okado I., Su'esu'e A., Pagano I. Effect of COVID-19-related reductions in cancer screening in Native Hawaiians and across urban and rural communities in Hawaii. Journal of Clinical Oncology 2021 39:28 SUPPL	Exclusion for outcomes: focus on cancer screening	Overall, reductions in cancer screening during the pandemic were seen.
172. Xin R., Li L., Qiaoli S., Xingyue W. Real Workload-Situated Training in COVID-19 Prevention of General Practice Residents in China: A Situated Cognition Study Frontiers in public health 2021 9 (765402-)	Duplicate	
173. Katrin G., Hilde S., Serge L., Henk C., Philip N., Veroniek S. The realization of a special cohort unit in the prevention of a general outbreak of SARS CoV2 in Flemish nursing homes European Geriatric Medicine 2020 11:SUPPL 1 (S43-)	Exclusion for population: focus on a special unit in nursing home	
174. Mira J.J., Carrillo I., Guilabert M., Mula A., Martin-Delgado J., Pérez-Jover M.V., Vicente M.A., Fernández C. Acute stress of the healthcare workforce during the COVID-19 pandemic evolution: A cross-sectional study in Spain BMJ Open 2020 10:11 Article Number e042555	Duplicate	
175. Yeung N.C.Y., Huang B., Lau C.Y.K., Lau J.T.F. Feeling anxious amid the covid-19 pandemic: Psychosocial correlates of anxiety symptoms among filipina domestic helpers in hong kong International Journal of Environmental Research and Public Health 2020 17:21 (1-15)	Exclusion for context and population: Focus on domestic helpers in Hong-Kong	



References	Inclusion or Exclusion	Conclusion and Comments
176. Martin-Delgado J., Viteri E., Mula A., Serpa P., Pacheco G., Prada D., de Andrade Lourenção D.C., Baptista P.C.P., Ramirez G., Mira J.J. Availability of personal protective equipment and diagnostic and treatment facilities for healthcare workers involved in COVID-19 care: A cross-sectional study in Brazil, Colombia, and Ecuador PLoS ONE 2020 15:11 November Article Number e0242185	Duplicate	
177. Baines R., Tredinnick-Rowe J., Jones R., Chatterjee A. Barriers and Enablers in Implementing Electronic Consultations in Primary Care: Scoping Review [In Process] Journal of Medical Internet Research 2020 22:11 Article Number e1937	Duplicate	Although the necessity to use online methods during the COVID-19 pandemic may have accelerated awareness, concerns over workload duplication and inequality of access may remain.
178. Hirko K.A., Kerver J.M., Ford S., Szafranski C., Beckett J., Kitchen C., Wendling A.L. Telehealth in response to the COVID-19 pandemic: Implications for rural health disparities Journal of the American Medical Informatics Association 2020 27:11 (1816-1818)	Exclusion for scope: focus on telehealth in rural area.	
179. Man Y.L., Ludwig D., Glanville J., Pollard L.C., Gorman C., Mukherjee J., Logan V., Coakley G., Galloway J. A joint effort against COVID-19: leading a remote regional training programme and collaborating with the British Society for Rheumatology (BSR) on a national level BMJ Leader 2020 4 Supplement 1 (A22-A23)	Exclusion for scope: focus on a remote medical training program in rheumatology	
180. Bielicki J.A., Duval X., Gobat N., Goossens H., Koopmans M., Tacconelli E., van der Werf S. Monitoring approaches for health-care workers during the COVID-19 pandemic The Lancet Infectious Diseases 2020 20:10 (e261-e267)	Exclusion for scope: focus on management of exposed and infected health-care workers	



References	Inclusion or Exclusion	Conclusion and Comments
181. Fekih-Romdhane F., Snene H., Jebri A., Ben Rhouma M., Cheour M. Psychological impact of the Pandemic COVID-19 Outbreak Among Medical Residents in Tunisia Asian Journal of Psychiatry 2020 53 Article Number 10234	Exclusion for population: focus on medical residents in Tunisia (le to the editor)	
182. Sani I., Hamza Y., Chedid Y., Amalendran J., Hamza N. Understanding the consequence of COVID-19 on undergraduate medical education: Medical students' perspective Annals of Medicine and Surgery 2020 58 (117-119)	Exclusion for scope: focus on medical education	
183. Williams R., Jenkins D.A., Ashcroft D.M., Brown B., Campbell S., Carr M.J., Cheraghi-sohi S., Kapur N., Thomas O., Webb R.T., Peek N. Diagnosis of physical and mental health conditions in primary care during the COVID-19 pandemic: a retrospective cohort study The Lancet Public Health 2020 5:10 (e543-e550)	Duplicate	
184. Dorner S., Carlson L.C., DeSharone A., Thompson R., Pu C.T., Mark E., Goldberg S.A. 131 A Novel Mobile Integrated Health Program for COVID-19 Response Annals of Emergency Medicine 2020 76:4 Supplement (S52-)	Exclusion for scope: focus on a Mobile integrated health (MIH) program	
185. Liu P.-Y., Tsai Y.-S., Chen P.-L., Tsai H.-P., Hsu L.-W., Wang C.-S., Lee N.-Y., Huang M.-S., Wu Y.-C., Ko W.-C., Yang Y.-C., Chiang J.-H., Shen M.-R. Application of an Artificial Intelligence Trilogity to Accelerate Processing of Suspected Patients with SARS-CoV-2 at a Smart Quarantine Station: Observational Study [In Process] Journal of Medical Internet Research 2020 22:10	Exclusion for scope: focus on AI in decision-making	



References	Inclusion or Exclusion	Conclusion and Comments
186. Halcomb E., Williams A., Ashley C., McInnes S., Stephen C., Calma K., James S. The support needs of Australian primary health care nurses during the COVID-19 pandemic Journal of nursing management 2020 28:7 (1553-1560)	Duplicate	
187. Ogunleye O.O., Basu D., Mueller D., et al. Response to the Novel Corona Virus (COVID-19) Pandemic Across Africa: Successes, Challenges, and Implications for the Future Frontiers in Pharmacology 2020 11 Article Number 1205	Exclusion for context and scope: focus on activities across Africa to reduce the spread of COVID-19	
188. Pettigrew L.M., Kumpunen S., Mays N. Primary care networks: The impact of covid-19 and the challenges ahead The BMJ 2020 370 Article Number m302	Exclusion for design: editorial very early in the pandemic period	
189. Stedman M., Lunt M., Davies M., Gibson M., Heald A. COVID-19: Generate and apply local modelled transmission and morbidity effects to provide an estimate of the variation in overall relative healthcare resource impact at general practice granularity International Journal of Clinical Practice 2020 74:9 Article Number e13533	Exclusion for scope: focus on a model of transmission at the early period of the pandemic	
190. Gray R., Sanders C. A reflection on the impact of COVID-19 on primary care in the United Kingdom Journal of interprofessional care 2020 34:5 (672-678)	Duplicate	
191. Adja K.Y.C., Golinelli D. What services should be guaranteed in universal health-care systems? Journal of primary health care 2020 12:3 (193-194)	Duplicate	
192. Jakharia-Shah N., Akhras V. Impact of the COVID-19 pandemic on minor dermatology operations at a tertiary centre	Exclusion for outcome: Focus on dermatology operations	



References	Inclusion or Exclusion	Conclusion and Comments
British Journal of Dermatology 2020 183:SUPPL 1 (211-)		
193. Teoh J.Y.-C., Ong W.L.K., Gonzalez-Padilla D., Castellani D., Dubin J.M., Esperto F., Campi R., Gudar K., Talwar R., Okhunov Z., Ng C.-F., Jain N., Gauhar V., Wong M.C.-S., Wroclawski M.L., Tanidir Y., Rivas J.G., Tiong H.-Y., Loeb S. A Global Survey on the Impact of COVID-19 on Urological Services European Urology 2020 78:2 (265-275)	Exclusion for outcome: focus on urological care and services	
194. Joy M., McGagh D., Jones N., Liyanage H., Sherlock J., Parimalanathan V., Akinyemi O., Vlymen J.V., Howsam G., Marshall M., Hobbs F.D.R., De Lusignan S. Reorganisation of primary care for older adults during COVID-19: A cross-sectional database study in the UK. British Journal of General Practice 2020 70:697 (E540-E547)	Duplicate	
195. Nyasulu J., Pandya H. The effects of coronavirus disease 2019 pandemic on the South African health system: A call to maintain essential health services African journal of primary health care & family medicine 2020 12:1(e1-e5)	Exclusion for context: South Africa and early period of pandemic	
196. Goel S., Sharma A. COVID-19 pandemic and its impact on cardiology and its subspecialty training Progress in Cardiovascular Diseases 2020 63:4 (525-526)	Exclusion for outcome: focus on education, training and personal life in cardiology trainees. Le to the editor	
197. Rawson T.M., Moore L.S.P., Castro-Sanchez E., Charani E., Davies F., Satta G., Ellington M.J., Holmes A.H. COVID-19 and the potential long-term impact on antimicrobial resistance	Exclusion for outcome : focus on antimicrobial resistance	



References	Inclusion or Exclusion	Conclusion and Comments
Journal of Antimicrobial Chemotherapy 2020 75:7 (1681-1684)		
198. Szram J., Vaux E. Pandemic times: Learning well in a time of COVID-19 Future Healthcare Journal 2020 7:2 (100-101)	Editorial Inclusion to identify other articles? Exclusion based on full text: focus on future training (outside COVID); no info for GPs workforce	Examples of references: . Birns et al. : work implementing the internal medical training (IMT) curriculum. . Hallowell et al.: implementation of the supported return to training (SuppoRTT) programme, created to support all trainees who have taken a break from clinical work. . Quadery et al.: a trust-based programme for clinical orientation for international medical graduates resulted in a significant increase in retention and cost improvement.
199. Ghafri T.A., Ajmi F.A., Balushi L.A., Kurup P.M., Ghamari A.A., Balushi Z.A., Fahdi F.A., Lawati H.A., Hashmi S.A., Manji A.A., Sharji A.A. Responses to the pandemic covid-19 in primary health care in Oman: Muscat experience Oman Medical Journal 2020 35:5 (1-15)	Exclusion for context Oman) and scope: focus on the response to the pandemic from January to mid-April 2020.	Descriptive study showing the trends of the confirmed positive cases of COVID-19 and the undertaken responses to the evolving epidemiological scenario. Very early in the pandemic
200. Hilbert B., Krauthausen M., Schrader H., Simmenroth A. The impact of the corona pandemic on working life of young family physicians an online survey among members of jade (Junge allgemeinmedizin deutschland) Zeitschrift fur Allgemeinmedizin 2020 96:12 (508-513)	Inclusion? Full text not available. 296 fulfilled the inclusion criteria. Almost 80 % of the participants were female.	Early period in the pandemic Focus on young physicians in training While 72 % reported a reduction of the workload, 13 % noticed an increase. 22 % of employed family physicians and 10 % of doctors in vocational training had to reduce their weekly workload due to short-time work. Conclusions This survey provided important insights into the work situation of young family physicians during the coronavirus pandemic. Future pandemics should not have an impact on the quality of specialty training. Politicians, medical associations and authorities should support practice owners and their employees financially and by providing sufficient protective equipment.
201. Collins C., O'connor N., Osborne B., Foy F. Long term impact of covid-19 on general practice must be assessed Irish Medical Journal 2020 113:10 (1-)	Exclusion for design: No abstract, no full text	



References	Inclusion or Exclusion	Conclusion and Comments
202. Arevian A.C., Jones F., Moore E.M., Goodsmith N., Aguilar-Gaxiola S., Ewing T., Siddiq H., Lester P., Cheung E., Ijadi-Maghsoodi R., Gabrielian S., Sugarman O.K., Bonds C., Benitez C., Innes-Gomberg D., Springgate B., Haywood C., Meyers D., Sherin J.E., Wells K. Mental health community and health system issues in covid-19: Lessons from aCadeMiC, community, provider and policy stakeholders Ethnicity and Disease 2020 30:4 (695-700)	Exclusion for scope and design (commentary): Focus on perceptions of academic, community, health system, and policy leaders from state, county, and local levels in commenting on community mental health needs in the COVID-19 pandemic	
203. Naseem M., Akhund R., Arshad H., Ibrahim M.T. Exploring the Potential of Artificial Intelligence and Machine Learning to Combat COVID-19 and Existing Opportunities for LMIC: A Scoping Review Journal of primary care & community health 2020 11(2150132720963634)	Exclusion for scope: Focus on AI in health care research	

2.3. Publications transmitted by experts in July and August 2022

References	Inclusion or Exclusion	Conclusion and Comments
1. Minguet C. COVID-19 et médecine générale. 2020	Inclusion? Inclusion based on full text	Narrative Belgium Focus on the first 3 months of the pandemic.
2. Luzet J. et al. General practitioners' experiences during the Covid-19 epidemic in the Bouches-du-Rhône department: Anxiety, impact on practice and doctor-patient relationship. 2021	Inclusion? Inclusion based on full text	Online survey (self-completion of the Spielberg validated questionnaire the STAI-Y for anxiety) August 2020 to measure the anxiety levels and its determinants of GPs in a French department during the first COVID-19 pandemic containment.
3. Rubin R. COVID-19's Crushing Effects on Medical Practices, Some of Which Might Not Survive. 2020	Inclusion? Inclusion based on full text	Narrative



References	Inclusion or Exclusion	Conclusion and Comments
4. Moynihan R. et al. Impact of COVID-19 pandemic on utilisation of healthcare services: a systematic review 2021	Inclusion? Inclusion based on full text	Systematic review (search until 10 August 2020) to determine the extent and nature of changes in utilisation of healthcare services during COVID-19 pandemic. 81 studies across 20 countries included
5. ASPE Impact of the COVID-19 Pandemic on the Hospital and Outpatient Clinician Workforce 2022	Inclusion? Inclusion based on full text	Combination of a literature review and primary analysis of data from the Census Bureau, Bureau of Labor Statistics, and other sources to describe: • Health care workforce shortages both prior to and during the pandemic; • COVID-19 impacts on the mental health of the health care workforce, related burnout, and physical health issues; • Overview of federal interventions to support the health care workforce during the pandemic; • Highlighting of workforce investments in the U.S. Department of Health and Human Services (HHS).
6. Rachamin Y. et al. Impact of the COVID-19 Pandemic on the Intensity of Health Services Use in General Practice: A Retrospective Cohort Study 2021	Inclusion? Inclusion based on full text	Retrospective cohort study based on anonymized electronic medical records to explore the impact of the Swiss shutdown in spring 2020 on the intensity of health services use in general practice
7. Wasim U. et al. The impact of the COVID-19 pandemic on impending cancer deaths due to delays in diagnosis in the UK. 2022	Inclusion? Exclusion based on full text for scope: no info on GPs but on the impact of the lockdown process in patients with cancer. Le to the editor	
8. Jefferson L. et al. GP wellbeing during the COVID-19 pandemic: a systematic review 2022	Duplicate	
9. Van den Bulck S. et al. The impact of the Covid-19 pandemic on the incidence of diseases and the provision of primary care: A registry-based study. 2022	Inclusion? Inclusion based on full text	Cohort study based on anonymized electronic medical records (Intego registry); Comparison of pre-pandemic care provision (February 1, 2018–January 31, 2020) and during the pandemic (February 1, 2020–January 31, 2021).



References	Inclusion or Exclusion	Conclusion and Comments
10. Turabian JL. Micro-Impact of the Pandemic by Covid-19 in the General Medicine: Clinical and Epidemiological Reflections from the Situation in Spain March 2020 2020	Inclusion? Inclusion based on full text	Narrative; GP' experience Re-organisation of primary care: Telephone triage, telemedicine,
11. Goddard A.F., Patel M. The changing face of medical professionalism and the impact of COVID-19 2021	Inclusion? Exclusion based on full text for population: no focus on GPs.	Comment COVID-19 has exacerbated tensions between medical professionalism and physician wellbeing. "The pandemic has placed substantial demands on already overstretched, understaffed, and under-resourced health systems."
12. Nicoli F. et al. Vulnerability and ethical issues faced by general practitioners during the COVID-19 pandemic in Italy: some reflections and lessons learned. 2021	Inclusion? Inclusion based on full text	Narrative viewpoint Focus on GPs vulnerability regarding death due to COVID-19.
13. Xu Z. et al. The Impact of COVID-19 on Primary Care General Practice Consultations in a Teaching Hospital in Shanghai, China. 2021	Inclusion? Inclusion based on full text	Retrospective observational cohort study, with EMR data on patient visits to general practitioners within the Tongren Hospital network.
14. Mughal F. et al. The impact of COVID-19 on primary care: Insights from the National Health Service (NHS) and future recommendations. 2021	Inclusion? Inclusion based on full text	Commentary; narrative review to outline the impact COVID-19 on the delivery of primary health care, and on primary care teams, and describe the NHS response General recommendations for primary care for COVID-19 and future unknown pandemics Quoted by another Mughal (see below)
<i>Mughal F. et al.</i> <i>The impact of COVID-19 on primary care in Europe. Lancet Reg Health Eur.</i> 2021	<i>Inclusion?</i> <i>Inclusion based on full text</i>	Commentary Strategies and Priorities
15. Dill M. We already needed more doctors. Then COVID-19 hit. AAMC website 2021	Inclusion? Inclusion based on full text	Commentary Projected shortage of primary health care physician and specialists (from 2019 to 2034) because of aging physician workforce and a growing, aging population.



References	Inclusion or Exclusion	Conclusion and Comments
16. Ballering A. et al. Persistence of somatic symptoms after COVID-19 in the Netherlands: an observational cohort study 2022	Inclusion? Exclusion based on full text for scope: persistent symptom after COVID-19	Multidisciplinary, prospective, population-based, observational cohort study (Lifelines), with digital COVID-19 questionnaires.
17. Brightling C. Evans R.A. Long COVID: which symptoms can be attributed to SARS-CoV-2 infection? 2022	Inclusion? Exclusion based on full text for scope: persistent symptom after COVID-19	Commentary The long COVID case definition needs to be further improved, potentially to describe different types of long COVID, of which better mechanistic understanding is crucial. This will lead to personalised multimodality treatments that can be implemented to manage the increasingly high number of people with long COVID.
18. De Sutter et al. TOGETHER WE MAKE CHANGE HAPPEN! Een toekomst voor de huisartsgeneeskunde in de eerstelijnszorg - Un avenir pour la médecine de famille dans les soins de santé primaires. 2022 Available from: www.togetherwemakechangehappen.org	Inclusion? Inclusion based on full text	Green paper Some impacts of the COVID-19 pandemic on the Belgian GPs
19. Kumpunen S. et al. Transformations in the landscape of primary health care during COVID-19: Themes from the European region 2022	Duplicate	
20. OECD Strengthening the frontline: How primary health care helps health systems adapt during the COVID-19 pandemic 2021	Inclusion? Inclusion based on full text	Rapid survey for international patients organisations Point of view from international primary care organizations Review by policy makers to ensure relevancy for their countries
21. OECD Health at a Glance: Europe 2020 : State of Health in the EU Cycle Chapter 1. How resilient have European health systems been to the COVID-19 crisis? 2020	Inclusion? Inclusion based on full text	International comparison to describe country responses to COVID-19.



References	Inclusion or Exclusion	Conclusion and Comments
22. OECD. Forum network Resilience of Health Systems to the COVID-19 Pandemic in Europe: Learning from the first wave. Colombo F. et al. Nov 2020	Summary of "Health at a glance: Europe 2020".	See above
23. Worldbank Colombo F. et al. Pathway to UHC: Three priorities for stronger, more resilient, more inclusive health systems (worldbank.org) 2021	Inclusion? Inclusion based on full text	Narrative <u>WHO has estimated the global health workers shortage at 18 million before the pandemic, in particular in Africa and South-East Asia. During the pandemic, 66% of countries reported insufficient staffing as the reason for service disruptions. Even in high-income countries, the lack of health and long-term care staff has proved to be more of a binding constraint than hospital beds and equipment.</u>
24. Worldbank Baris E et al. Walking the Talk: Reimagining primary health care after COVID-19 2022	Inclusion? Inclusion based on full text	Peer-reviewed and grey literature, as well as data sources from the World Bank, OECD, WHO, other specialized UN agencies, and the Institute for Health Metrics and Evaluation (IHME)
25. Groenewegen P. et al. Snelle anpassing praktijkorganisatie tijdens de coronapandemie 2022 PriCov-19 (een pan-Europees vragenlijstonderzoek onder huisartsen naar de gevolgen van de pandemie voor hun functioneren en voor de organisatie van hun praktijk)	Inclusion? Inclusion based on full text	International survey for GPs practices on general information about the practice, patient flow, infection prevention, information processing, collaboration, collegiality and concern for one's own well-being, and the policy of government and professional organizations (started in 2020 by the expertisecentrum Quality and Safety Ghent van de Vakgroep Volksgezondheid en Eerstelijnszorg van de Universiteit Gent (with EQuIP, EGPRN and EFPC)
26. Collins C. et al. Distress and Wellbeing among General Practitioners in 33 Countries during COVID-19: Results from the Cross-Sectional PRICOV-19 Study to Inform Health System Interventions 2022	Inclusion? Inclusion based on full text	Survey by online self-reported questionnaire among GP practices Practice- and system-level organizational factors are needed to enhance wellbeing and support primary care physicians.



References	Inclusion or Exclusion	Conclusion and Comments
27. Wilkinson Anna N. Mitigating COVID-19's impact on missed and delayed cancer diagnoses / Atténuer les répercussions de la COVID-19 sur les diagnostics de cancer manqués ou retardés 2022	Commentary	Focus on cancer screening, diagnosis, follow-up and conclusion that "The impact of COVID-19 on cancer is far reaching: screening backlogs, delayed workup of symptomatic patients and abnormal screening results, and delays in cancer treatment and research, all exacerbated by patient apprehension to be seen in person. It is clear that there is not only a lost cohort of screened patients, but also a subset of missed cancer diagnoses due to delays in patient presentation and assessment, leading to stage migration in those cancers that are diagnosed.
28. Williams P.A. et al. AACR Report on the Impact of COVID-19 on Cancer Research and Patient Care 2022	Inclusion ? Inclusion based on full text	Focus on the burden of COVID-19 among patients with cancer and highlighting of the challenges as well as future opportunities created by the pandemic in cancer research and patient care.



3. APPENDIX 3 – OVERVIEW OF STUDIES INCLUDED PER CHAPTER



3.1. Healthcare system strategies used to manage the COVID-19 pandemic and impacting general practices

Table 1 – Brief description of the included publications related to strategies used to manage the pandemic

References	Context	Methods	Results	Topic
Archer S. et al.¹ Impact of the COVID-19 pandemic on cancer assessment in primary care: a qualitative study of GP views 2021	UK (East of England) GPs Early period of the pandemic	Semi-structured interviews via Zoom or Microsoft Teams to understand GPs' views on the impact of the COVID-19 pandemic on the clinical assessment of possible cancer. Between 7 August and 10 September 2020. Twenty-three GPs from 16 different practices.	Consistent with NHS data, fewer patients accessing primary care. - Remote consultations on managing patients with possible cancer symptoms; - Triaging and referring patients with possible cancer.	Focus on UK strategy regarding cancer patients As other surveys: uncertainties about generalisability of the findings
Alami H. et al.² 2021	Quebec (Canada) Whole HC system Health reform in 2015 with budget decrease (by 33%) Early in the pandemic (mid-March to mid-May 2020)	Field observations and available data on the first wave of the pandemic.	- Telehealth rapidly deployed - Mobilisation of HCWs, personnel from the Canadian Armed Forces and the Canadian Red Cross - Web portal entitled "Je contribue !" (I Contribute!) to facilitate the recruitment of people who wished to offer their services - Protocols and training at the local level - Suspension of leaves of absence and vacations for HCWs, redeployment to other settings or imposed overtime.	Overview of strategies used in the Canadian HCS Not specific to GPs Poor design Several global recommendations in the text
Anderson M. et al.³ Securing a sustainable and fit-for-purpose UK health and care workforce. 2021	UK HCWs	UK Health policy paper with illustrative projections	Current response to health and care workforce shortfalls: reliance on foreign staff, on temporary (so-called bank or agency) staff; changing skill mix and task shifting; enhanced recruitment initiatives (e.g. bursaries, a national and international recruitment drive, fellowships for further training, and return to work schemes for GPs not currently practicing)	UK strategies for increase HC workforces



References	Context	Methods	Results	Topic
Anderson M. et al.⁴ LSE–Lancet Commission on the future of the NHS: re-laying the foundations for an equitable and efficient health and care service after COVID-19 2021	UK NHS	Combination of an analysis of priorities for the future of the NHS that were identified before the COVID-19 pandemic with additional analysis of the COVID-19 response to derive recommendations that ensure both resilience to further major threats to health and the long-term advancement of the NHS to meet population needs. The G7 countries (ie, Canada, France, Germany, Italy, Japan, the UK, and the USA [although sometimes the USA is excluded as an outlier in terms of expenditure and variation in outcomes]) and EU15 countries (ie, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the UK) in 2019 were used as standards.	The NHS, from a point of little excess capacity following years of austerity, has had to respond to the COVID-19 pandemic with speed and innovation. Use redeployment, volunteers, retired HCWs, prioritization of vulnerable patients, close collaboration between primary and secondary care	
ASPE⁵ 2022	USA Hospital and outpatient clinician workforce. 2 years of pandemics	Combination of a literature review and primary analysis of data from the Census Bureau, Bureau of Labor Statistics, and other sources.	Short-term deployments from federal or state emergency resources (e.g. federal military or U.S. Public Health Service personnel and state national guard) or moving staff within hospitals, using travel nurses, asking infected HCW to work...	Overview of strategies used in USA HCS 2 years of the pandemics Not specific to GPs.



References	Context	Methods	Results	Topic
Groenewegen P. et al.⁶ 2022 PriCov-19	The Netherlands GPs March 2021	International survey for GPs practices on general information about the practice, patient flow, infection prevention, information processing, collaboration, collegiality and concern for one's own well-being, and the policy of government and professional organizations (started in 2020 by the expertisecentrum Quality and Safety Ghent van de Vakgroep Volksgezondheid en Eerstelijnszorg van de Universiteit Gent (with EQUIP, EGPRN and EFPC)	- Need of changes in general practices, e.g. more cooperation with the public health care and the social domain. - Introduction of digital healthcare applications, especially electronic consultations. - Development of new guidelines and adaptation of existing ones, thanks in part to good support from professional organisations.	Strategies used by NL GPs
Jackson C.L.⁷ 2022	Australia GPs	Commentary	With very little resourcing, adaptation to rapidly changing practice protocols, practice-wide vaccination training, complex administrative and information technology redesign, and rapidly escalating service demand.	Overview of strategies used by Australian GPs Very poor design Many general consideration
Kumpunen S.⁸ 2022	WHO European region First year of pandemic Primary care* *differ from country to country, but GP = core of PHC.	Analysis of data from the Health System Response Monitor (HSRM) i.e. online platform established in March 2020 to collect up-to-date information on how countries in the WHO European region and Canada are responding to the crisis (www.COVID19healthsystem.org). (joint initiative by the European Observatory on Health Systems and Policies, WHO Regional Office for Europe and European Commission).	Three models: 1) Multidisciplinary PHC teams coordinating with public health 2) PHC providers defining and identifying vulnerable populations 3) PHC providers using digital solutions for remote care (even by retired or no more working GPs). Four strategic enablers 1: Increasing workforce capacity asking for volunteers; mass training to multidisciplinary staff; redeployment. 2: Managing demand through risk communication and digital innovations 3: Prioritising vulnerable population cohorts. 4: Prioritising remote care : new funding, support payment, code to fee remote care.	International overview of strategies used in PHC Importance of building multidisciplinary and public health collaboration, algorithms for risk stratification and digital innovations. 2 major gaps: 1. countries implemented schemes at a national level, many of which did not explicitly state a role for PHC providers and no capture of local level initiatives; 2. limited discussion of the connections between PHC and long-term care (LTC).



References	Context	Methods	Results	Topic
Mahlknecht A. et al.⁹ 2022	Italy GPs More than 1 year of pandemic	2-time cross-sectional online survey involving GPs in a northern Italian region in September 2020 and March/April 2021 84 GPs (29.6% of invited GPs) in the first survey, and 41 GPs (14.4%) in the second survey.	Most practices introduced major changes in their workflow, mainly appointment-based visits and separating Covid-19-suspected patients.	Strategies used by Italian GPs Generalizability limited by (specific Italian region). Response rate low compromising validity and representativeness of the results but comparable to other GP surveys. Potential selection bias by overrepresentation of GPs who had been infected or who suffered from particularly high distress.
Matenge S. et al.¹⁰ 2022	International (including 2 Belgian studies) Primary care* Early in the pandemic * focus on general practice or office based medical care.	Rapid literature review using PubMed/MEDLINE, SCOPUS, and Cochrane. 15 December 2020	17 studies included, low quality Several adaptations to model of care: Integrating telehealth; Limiting in-person care; Adopting public health measures (screening, care pathways for non-COVID- and COVID-related problems, infection control measures...); Enhancing surge capacity (enhancing staffing, increasing work hours); Proactively contacting high-risk individuals.	International overview of strategies used in PHC No gray literature, publications only in English Exclusion of publication on telehealth but theme mentioned within the analysis Included Verhoeven and Danhieux
Minguet C.¹¹ 2020	<u>Belgium</u> GPs 3 first months of the pandemic.	Narrative to provide an overview of the first months of the COVID history in Belgium in the GPs perspective.	Lack of material, telemedicine, first consultations by phone (with reimbursement), involvement of GPs in triage by phone, triage at the doors of hospital, support by the CMG.	History of strategies used by Belgian GPs Very poor design Very early in the pandemic (first 3 months)
Mughal F. et al.¹² 2021	Europe PHC	Commentary; narrative review	- Remote primary care consultations quickly implemented in many European countries - Together with colleagues, providing mutual support - Creation of designated areas in PHC to segregate patients suspected or confirmed to have COVID-19. - Multiprof PC teams for assessing COVID-19 patients, Vaccination campaign in many countries	Overview of strategies used in European PHC Poor quality COVID impact in Europe = new organization of primary care services, research, etc. Quoted Verhoeven



References	Context	Methods	Results	Topic
Mughal F. et al. ¹³ 2021	UK (and international examples) Primary care services	Commentary; narrative review to outline the impact COVID-19 on the delivery of primary health care, and on primary care teams, and describe the NHS response	Organization of remote consulting, support for primary care research such as the PRINCIPLE trial platform, publication of the NICE guideline, participation to the vaccination campaign. On 1 April 2021, launch of the UK Health Security Agency, a new organization responsible for preparing, preventing, and responding to public health threats and pandemics, In 2020 primary care networks (PCN) were established, centred around general practice registered patient lists, but working in partnership with community, mental health, social care, hospital, dental, pharmacy, and optometry care to provide holistic, integrated, and personalised patient care close to home. There are 1,250 PCNs across England serving communities of roughly 30,000 to 50,000 patients.	Overview of strategies used in UK PHC (and some other countries) COVID impact in UK = new organization of primary care services, research, etc.
Nicoli F. et al. ¹⁴ 2021	Italy but also few examples of experiences in Brazil, Australia and Germany. GPs Death rate due to COVID 19 = 1.86 per 1000 GPs versus 0.88 per 1000 other physicians. One year pandemic	Narrative viewpoint to discuss clinical ethics questions related to the vulnerability of GPs and the community during the pandemic.	Total lack of, or inadequate PPE at the beginning, no training to use protection, , Rapid reaction of the Italian GP associations to set their own rules regarding daily job organization. Virtual medicine Problematic synergy between hospital and PHC (because the 21 health care services led to different organization of territorial and hospital services) In Germany, very rapid increase in the number of ICU beds during the first wave (from 12,000 to 40,000) and network of GPs immediately available to deal with and manage milder COVID-19 cases, allowing hospitals to focus on the more severely ill patients.	Overview of strategies used by Italian GPs Very poor design. Focus on GPs vulnerability regarding death due to COVID-19. Germany is an interesting example of adaptation
OECD ¹⁵	International Whole HC system First wave of the pandemic	Rapid survey for international patients organisations Point of view from international primary care organizations Review by policy makers to ensure relevancy for their countries	In many OECD countries: - Reorganising the delivery of PHC services by establishing team practices and a strong link with community services, expanding home-based programmes - Rearranging tasks and responsibilities in PHC, (e.g. community pharmacists).	International overview of strategies used in PHC



References	Context	Methods	Results	Topic
Strengthening the frontline: How primary health care helps health systems adapt during the COVID-19 pandemic 2021		To describe how the COVID-19 pandemic is impacting the lives of people with chronic conditions and how primary health care systems play an essential role in response to the pandemic	- Leveraging digital tools and systems such as e-Health and telemedicine, for example by new legislation, new telemedicine services or new guidelines and regulations - Add-on payments for PHC providers who are facing high workload and risks due to the pandemic, including for teleconsultation services or home visits or for hygiene and safety measures.	COVID impact = reorganisation of primary care, useful for coping with the surge in demand while maintaining care continuity and helps mitigating pressure on the entire health system. Strong primary health care – organised in multi-disciplinary teams and with innovative roles for health professionals, integrated with community health services, equipped with digital technology, and working with well-designed incentives – helps deliver a successful health system response.
OECD¹⁶ Health at a Glance: Europe 2020 : State of Health in the EU Cycle	International All HCS First wave of the pandemic (first ten months of the year)	International comparison to describe country responses to COVID-19.	- Additional staff as inactive, retired HCWs or students (1/2 of European countries); Transfer to hospitals (2/3 of European countries). - Several innovations in the roles and responsibilities of different HCWs (e.g.. community pharmacists) - Ensuring PPE for HCWs - Support service for mental health & well-being of HCWs (e.g. through peer support groups or dedicated phone support lines.) - Adaptation of PHC services (establishment of COVID-19 community care facilities, use of home-based programmes) - Adoption of telehealth and telemedicine, limited in Europe before the pandemic.	International overview of strategies used for the whole health care system (HCS) & PHC COVID impact = need to consider the resilience of health systems as an equally important dimension of health system performance alongside accessibility, quality of care and efficiency. Early period of the pandemic. <i>“initial findings”, not a definitive review”.</i>



References	Context	Methods	Results	Topic
Taylor MK. et al.¹⁷ 2022	International Experts in primary care Early in the pandemic (Survey from April 15 – May, 2020)	Analysis of one question* part of a survey compiling PHC experts' perceptions of how their countries adapted to the COVID-19 pandemic. **"Since the first identified case of COVID-19 in your country, have the roles of a typical PHC team in your country changed?" 339 unique responses recorded for the open-text portion of the question from 69 countries .	Three overarching themes: 3) Rapid adoption or expansion of telehealth, patient portals, and mobile phone apps in order to limit physical contact.	International overview of strategies used in PHC Respondents are not representative of their respective countries' policies or protocols, nor are they necessarily representative of other primary care clinicians' experiences within those countries
Turabian JL.¹⁸ 2020	Spain (Toledo) All HCWs but analysis of PHC Very early period of pandemic	Narrative; Author experience as GP; Personal point of view	Re-organisation of primary care: Telephone triage, telemedicine,	Overview of strategies used in Spanish HCS (&PHC) Very poor design. Very early period of pandemic.
Verhoeven V. et al.¹⁹ 2020.	Belgium (Flanders) GPs Very early in the pandemic: between 24 and 31 March 2020 (early phase of the outbreak, in a time when a new routine was not yet established)	Semi-structured interviews with 132 GPs in Flanders, using a topic list based on the WONCA definition of core competencies in general practice. Mix of internship supervisors, academics and GPs affiliated to university	6 themes coinciding with the PC core competencies and a 7 th on personal protection. (see chapter workload). For strategies: telephone consultations, digital prescriptions, protective measurement	Strategies used by Belgian GPs Interviewers were medical students who had no experience in interviewing. GPs, had the opportunity to read and correct their statements in their interviews, which increased trustworthiness of the findings.



3.2. Impact on the demand for primary healthcare / GPs workload

Table 2 – Brief description of the included publications related to impact on demand for primary healthcare

References	Context	Methods	Results	Topic
Archer S. et al.¹ Impact of the COVID-19 pandemic on cancer assessment in primary care: a qualitative study of GP views 2021	UK (East of England) GPs Early period of the pandemic	Semi-structured interviews via Zoom or Microsoft Teams. Between 7 August and 10 September 2020. Twenty-three GPs from 16 different practices.	Consistent with NHS data, fewer patients accessing primary care. Three main themes : - Changes in patient help-seeking behaviour on symptoms at presentation (because of fear of catching COVID-19; - Remote consultations on managing patients with possible cancer symptoms; - Triaging and referring patients with possible cancer. While drop in healthcare use provided an opportunity for some to self-manage and resolve minor symptoms themselves, for others it may have resulted in later presentation with symptoms suggestive of cancer. Likely problems owing to backlog in imaging and delayed routine surgeries but also increased workload in primary care as GPs supported patients with ongoing symptoms.	Early and future GPs workload regarding cancer As other surveys: uncertainties about generalisability of the findings
Coenen L. et al.²⁰ 2022	<u>Belgium (Flanders)</u> GPs Period March - September 2020.	Online survey to GP trainers and trainees (survey sent out to all GP trainers and their trainees in Flanders). 216 (response 25%) GP trainees and 311 (response 26%) trainers participated. 26% considered as reasonable response rate for online surveys and sufficient for a confidence level of at least 80%.	Overload of administrative work; population insufficiently informed regarding changes of guidelines; lack of PPE; long phone calls from patients. Acceptable workload during the first period (March-May 2020) but intolerable during the beginning of the second period (September 2020) and is still increasing.	<u>GPs trainees and trainers administrative workload</u> Most of the time, GP trainees are active in clinical practice (80%), where they work autonomously with daily supervision of a GP trainer.



References	Context	Methods	Results	Topic
Danhieux K. et al.²¹ 2020	<u>Belgium</u> (semi-rural area from Flanders) GPs, nurses, dieticians During 6 weeks, starting week 12 of the pandemic	Qualitative study in 16 primary care practices: 6 solo working, 4 monodisciplinary and 7 multidisciplinary to understand how COVID-19 pandemic affects the processes (content and delivery) of routine care for chronic patients 21 semi-structured video interviews (doctors, nurses, dieticians). Saturation obtained after 12 interviews.	3 themes: - Changes in health care organization (drop in consultation for chronic care: prohibition to see patient for non-urgent problem; fear among patients; energy used for re-organization; difficulties to collaborate with specialists for non-acute matters), - Risk stratification (few pro-active selection and contacting of high-risk patients for GPs) - Self-management support (not improved).	<u>Belgian GPs workload (routine care for chronic patients)</u> Early in the pandemic. <u>Need for better organization.</u> <u>Light on pre-existing deficiencies in primary care practices.</u> Only Flanders, no quantitative data, no info on patients experience
Fernández-Aguilar C. et al.²² Has COVID-19 changed the workload for primary care physicians? The case of Spain. 2021	Spain Primary Health Centers of the Granada-Metropolitan Health district (Andalusia). GPs Early in the pandemic (height of the initial peak of the COVID-19 pandemic)	Subjective measurement procedure of the physician workload during (April 2020) and before the COVID-19 crisis (March and April 2017).. Use of the National Aeronautics and Space Administration-Task Load Index (NASA-TLX) questionnaire. A total of 102 records from 16 doctors from a primary health center in 2017 vs 132 records from 30 general practitioners in 2020	Significantly higher workload during COVID-19 in relation to a previous situation (66.1% (SD 16.3) versus 48.6% (SD 12.6) before COVID-19) (p < 0.001). Most important increase in absolute terms = increase in the temporal and demand followed by the mental, effort and physical demand.	COVID impact = mental overload in PHC physicians in Spain. Limitation: representativeness and subjective measurement Figure 3 provides proposals or intervention measures to reduce or improve the physician's work overload
Joy M. et al.²³ 2020	UK Older patients primary care Earlier period of the pandemic	Cross-sectional database study examining consultations (Computerised medical records) between 17 February and 10 May 2020 for patients aged ≥65 years, drawn from primary care practices within the Oxford Royal College of General Practitioners (RCGP) Research and Surveillance Centre (RSC) sentinel network, UK	3 851 304 consultations Rate of telephone and electronic/video consultations more than doubled across the study period (106.0% and 102.8%, respectively). Face-to-face consultations fell by 64.6% and home visits by 62.6%. This predominantly occurred across week 11 (week commencing 9 March 2020), coinciding with national policy change. Polypharmacy and frailty were associated with a relative increase in consultations.	PHC workload (primary care consultation type for older adults) Categorisation of consultation type relies on how this has been recorded within the original dataset.



References	Context	Methods	Results	Topic
	Since 2017, RCGP RSC has integrated analysis of workload trends into its standard activities.	Based on frailty and polypharmacy as surrogates for complexity, as well as socioeconomic status.	Further evidence is needed to know whether the content of remote consultations is equivalent to face-to-face consulting, such as proportion that includes an opportunistic disease prevention or health promotion element. Future studies needed to determine the impact of consultation type on length of appointments, overall workload, quality of care within the consultation, and patients' experience of remote consultations, including possible barriers to accessing care.	Length of consultation not captured, and fewer overall numbers of consultations do not necessarily equate to less work All analyses of consultation rates reflect activity rather than demand, and the number of consultations conducted is constrained by the number of appointments available.
Mahlknecht A. et al. ⁹ 2022	Italy GPs	2-time cross-sectional online survey involving GPs in a northern Italian region in September 2020 and March/April 2021 84 GPs (29.6% of invited GPs) in the first survey, and 41 GPs (14.4%) in the second survey.	Notable workload increase, tendentially higher during the advanced stages of the pandemic. Notable increase between the first and the second survey regarding the frequency of Covid-related patient contacts and phone calls. In the second survey, the GPs felt more prepared to self-protection and outpatient treatment of Covid-affected patients. Communication with health authorities and hospitals rated as improvable. Efforts should be undertaken to efficiently strengthen primary care which plays an important role in pandemic events.	Italian GPs workload Generalizability limited by (specific Italian region). Response rate low compromising validity and representativeness of the results but comparable to other GP surveys. Potential selection bias by overrepresentation of GPs who had been infected or who suffered from particularly high distress.
Mandal A, Purkey E. ²⁴ 2022	Canada (Ontario) Rural GPs (family physicians with regular duties in at least two clinical settings (i.e., emergency department, clinics, hospitals, long-term care, etc.))	Survey between May and early August 2021	25 physicians 7 themes: psychological impact of the COVID-19; Excessive increase in workload and responsibilities; management of risk of infection; management of limited resources; impact on familial, professional and public relationship; use of coping strategies; experience accessing physician wellness resources	Canadian rural GPs workload Few participants and risk of bias (more stressed)



References	Context	Methods	Results	Topic
	<u>1/4 Canadian physicians and residents reported high levels of burnout before the pandemic.</u>		Needs of info; increased mental health demand; additional tasks (other PCP tasks, work in ICU); unpredictability of workload with the changing nature of the pandemic (which cause anxiety – see mental health chapter). Concerns of the physicians included also doing more investigations to compensate for the lack of a physical exam.	
Matenge S. et al.¹⁰ 2022	International (including 2 Belgian studies) Primary care* Early in the pandemic *primary care = the first point of health care access, with a focus on general practice or office based medical care.	Rapid literature review using PubMed/MEDLINE, SCOPUS, and Cochrane. 15 December 2020	17 studies included, low quality Disruptions to chronic disease management and preventive care.	International overview of PHC workload No gray literature, publications only in English Exclusion of publication on telehealth but theme mentioned within the analysis Included Verhoeven and Danhieux
Moynihan R. et al.²⁵ 2021	International HC services (all categories) Early in the pandemic (Studies included up to the end of May 2020).	Systematic review in PubMed, Embase, the Cochrane COVID-19 Study Register and preprint servers via Europe PMC (search until 10 August 2020) Covid-19 AND Health services AND Admissions AND Impact in Pubmed. This search string was translated for use in other databases (Embase, Cochrane) using the Polyglot Search Translator Risks of bias assessment	81 studies across 20 countries included. 3 were multinational; 20 originated from the USA; 15 from Italy; 8 from France; 6 from Germany; 5 from the UK; 3 from Spain; 2 from each of Taiwan, Hong Kong, Greece, Denmark, Qatar, Australia; and 1 from each of Argentina, China, Canada, Brazil, Belgium, Chile, Monaco, Turkey and Portugal. A median 37% reduction in services overall (comprising median reductions for visits of 42%, admissions 28%, diagnostics tests and imaging 31% and for therapeutics and preventive care 30%). Greater reductions among people with less severe illness (but may be without harm given existing evidence about too much medicine).	All HC workload COVID impact = decrease of utilisation of HC services. First months of the pandemic. Primary studies assessed as heterogenous and with unclear risk of bias. Sixty-nine per cent (56/81) of studies were considered to be at high risk of bias due to insufficient data for characterising prepandemic utilisation



References	Context	Methods	Results	Topic
Mughal F. et al. ¹² The impact of COVID-19 on primary care in Europe 2021	Europe PHC	Commentary; narrative review	Continuing burden of disease caused by long-COVID and risk of mental health problems for those who have lost jobs or missed out on education: there will be much to do, and there will have to be a sustained investment in primary care in Europe.	Future impact on PHC Poor quality Quoted Verhoeven
OECD ¹⁶ Health at a Glance: Europe 2020 : State of Health in the EU Cycle	International All HCS First wave of the pandemic (first ten months of the year)	International comparison to describe country responses to COVID-19.	Death, disruptions to routine care, socio-economic impact, increased workload on HCW... <i>The exceptional workload and psychological drain on health professionals led to a considerable mental health burden, with possible long-term effects for their well-being.</i>	International HCS & PHC workload Early period of the pandemic. "initial findings", not a definitive review".
Parkinson A. et al. ²⁶ 2022	Australia Primary care	Narrative review	Key problem: deferring or cancelling usual and preventive care Lessons learned from other countries	Australian PHC workload (chronic disease management) Poor design (no method described)
Rachamin Y. et al. ²⁷ 2021	Switzerland German-speaking part GPs No distinct "lockdown period" in Switzerland but rather a stay-at-home recommendation coupled with the closure of non-essential businesses and schools ("shutdown period").	Retrospective cohort study based on anonymized electronic medical records; Analysis of weekly consultation counts, blood pressure (BP) and glycated hemoglobin (HbA1c) measurement counts per 100 patients in one patient cohort for January-June 2019 (control, 173,523 patients) and 2020 (179,086 patients). 114,743 patients were part of both cohorts	278 GPs; 139 practices The shutdown period was associated with a 15%–20% decrease in consultations with GPs and a 30%–35% decrease in HbA1c and BP measurements. Similar proportional decreases for the total general practice population and for patients with chronic conditions at particular high risk for severe COVID-19 hypertension, diabetes, CVD). Among different age groups, the decrease in consultation counts was highest for patients aged 60–80 and lower for patients aged <60 years and >80 years. No sign (in any group) for over-compensation of the "missed" consultations and measurements in the weeks that followed the shutdown period (in line with rates expected based on the year 2019).	Swiss GPs service use COVID impact = decrease of Swiss GPs consultations and patients monitoring. Focus on the shutdown period. Limitations inherent to database studies, such as missing data entries for diagnosis codes and laboratory and vital signs measurements. However, missing rates are not expected to change over time.



References	Context	Methods	Results	Topic
Ribes J. et al.²⁸ 2022	Spain HC system Two pandemic years	Comparison of cancer incidence between pre-pandemic (2019) and pandemic (March 2020-January 2022) periods in the Catalan Pathology Registry (CPR) Analysis of the data from the Catalan Pathology Registry (CPR), which covers ~90% of all pathological diagnoses in the Catalan public health system. Estimation of the <u>correlation between cancer diagnosis and COVID-19 health care workload</u>	After two pandemic years, cancer diagnosis decreased by 12% (SIR 0.88, 95% CI 0.87-0.89). Without nonmelanoma skin cancer, 72% of the cancer underdiagnosis was generated in 2020. Diagnoses decreased more in men than in women. <u>In the first wave, CPR cancer diagnosis was inversely correlated with high COVID-19 caseload in primary care (R -0.91, 95% CI -0.97 to -0.75) and occupancy in conventional hospital wards (R -0.91, 95% CI -0.99 to -0.48) and intensive care (R -0.91, 95% CI 95% -0.98 to -0.70).</u> In the rest of the pandemic, no association was detected between cancer diagnosis and health care workload due to COVID-19. <u>In the fifth wave, a positive association was found only in primary care (R: 0.48, 95% CI 0.02-0.77).</u> Short- and long-term clinical consequences, such as stage at diagnosis and changes in survival rates, will need to be carefully evaluated later through population-based cancer registries.	Early and future HC workload (cancer diagnosis) Interesting since 2 years analysed. Lack of clinical data, and thus no stage at diagnosis. Focus on patients diagnosed in the public health system, without taking into account the increased use of private insurance in low educational groups under 50 years of age, although its impact would be quite limited due to the low cancer risk in this age group
Rubin R.²⁹ 2020	USA All physician practices Early in the pandemic (publication JAMA July 2020)	Narrative, commentary	Negative financial impact of the pandemic, accelerating closure of small practices. In a survey of 558 US primary care physicians fielded May 29 through June 1—nearly 3 months into the pandemic—6% of respondents said their practices were closed, perhaps temporarily, and 35% said they've furloughed staff, according to the non-profit Primary Care Collaborative (PCC) and the Larry A. Green Center. Financial support needed for telemedicine also after the pandemic Practices also need to figure out the logistics—the when and where of telemedicine visits—and “we need to train the patients,”	US financial resource and closure of small practices Not only GPs COVID-19 impact = decreased financial resources. First months of the pandemic. Very low quality, context different from Belgium (e.g. patients without insurance)
Schaffler-Schaden D. et al.³⁰	Austria and Germany	Online survey among 723 GPs in Austria and Germany over a period of 12 weeks (April 3–July 2, 2020).	Less direct contact with patients at the beginning of the survey (96 vs. 49% at the end of the study period).	Austrian and German PCP workload



References	Context	Methods	Results	Topic
2022	GPs Early period of the pandemic		At first, PCP mainly concerned with pandemic-related issues and care for the patients of GP colleagues that were in quarantine, which meant they had less time for routine work such as screenings and treating chronic diseases. Over the survey period, GPs' self-confidence increased and their concerns about income loss decreased. Conclusions: Following a difficult initial phase when protective equipment and information were lacking, physicians in primary care adapted quickly to new situations.	COVID impact = decrease of face-to-face contact but increase of telephone contact with patients. Questionnaire developed in a very short time and maybe not have covered all relevant aspects; No response rate; GPs lost to FU may be less affected by the pandemic; Possible selection and interpretation bias.
Taylor MK. et al. ¹⁷ 2022	International Experts in primary care Early in the pandemic (Survey from April 15 – May, 2020)	Analysis of one question* part of a survey compiling PHC experts' perceptions of how their countries adapted to the COVID-19 pandemic. **"Since the first identified case of COVID-19 in your country, have the roles of a typical PHC team in your country changed?" 339 unique responses recorded for the open-text portion of the question from 69 countries .	Three overarching themes: 2) Patient care concerns about COVID-19 and for routine and chronic conditions;	International overview of PHC workload Respondents are not representative of their respective countries' policies or protocols, nor are they necessarily representative of other primary care clinicians' experiences within those countries
Tu K. et al. ³¹ ; INTERNational ConsoRtium of Primary Care Big Data Researchers (INTRePID). 2022	Primary care physician (PCP) in 9 countries around the world (Australia, Canada, China, Norway, Singapore, South Korea, Sweden, the UK and the USA).	International comparative study of changes in primary care visit volumes and switch to virtual care in 2019–2020. EMR data or physician billing claims data covering the primary care population in a given region, or a sample of the population. Calcul of the Rate ratios (RRs) of total weekly visit volume and the proportion of weekly visits that were virtual in the pandemic period in 2020 compared with the same prepandemic period in 2019.	All INTRePID countries experienced a drop in in-person visits to PCPs immediately following the pandemic onset and showed various degrees of recovery rebounding of in-person visits or a switch to virtual visits (figure 2). The countries with the largest decreases in visit volume during the pandemic (China (RR 0.72 (95% CI 0.58 to 0.88)), Singapore (RR 0.73 (95% CI 0.65 to 0.83)), South Korea (RR 0.86 (95% CI 0.79 to 0.94)) were those who did not shift to virtual care.	International primary health care workload The term visit can be referred to as an attendance, encounter, consultation, contact or event - Availability of data ranged from national level data to only one or a few clinic's data in one country. - No capture all the activities of PCPs - Possibility that other HCWs increased delivery of primary care services in some areas



References	Context	Methods	Results	Topic
		Key features of each country's primary care healthcare system, COVID-19 incidence patterns and containment and health indices (a composite measure of 11 policy response indicators such as school and workplace closures, travel bans, testing policy and contact tracing) in the interpretation of findings. 80 889 386 primary care visits captured in INTRePID countries in 2019 and 2020.		- Only unadjusted analyses as demographics and other environmental factors were not available).
Van den Bulck S. et al. ³² 2022	<u>Belgium</u> <u>GPs</u> First year of the Covid-19.	Cohort study based on anonymized electronic medical records (Intego registry) to assess the impact of Covid-19 measures on primary care provision and more particularly how often and by whom primary care was consulted during the first year of the Covid-19 pandemic. In addition, to evaluate the evolution of disease incidences in Flanders (Belgium) during the first year of the Covid-19. From 105 practices in Flanders Comparison of pre-pandemic care provision (February 1, 2018–January 31, 2020) and during the pandemic (February 1, 2020–January 31, 2021).	For the reference category (aged 18–35, female, Belgian, living outside center cities, high socio-economic status): Increase by 9.1% of overall care provision and by 5.1% in acute diagnoses but decrease by 12.8% in the selected chronic diagnoses except for obesity Relative to other groups in the population, the pandemic caused a reduction in care provision for children aged 0–17 year and patients from a lower socio-economic situation. Large variation during the year: During the first wave, strong reduction of care provision (peak reductions in radiology orders (-74%), lab tests (-50%), chronic diagnoses (-30%) and acute diagnoses (-28%). In between the first and second Covid-19 wave, acute diagnoses (excluding Covid-19 related diagnoses) returned to pre-pandemic levels. Around 25% of the acute diagnoses in this period were Covid-19 related. The number of chronic diagnoses and radiology orders slightly increased.	Belgian GPs service use The concept syndemic is used to label the synergistic interaction of two or more coexistent conditions, biological, economical and/or environmental factors and the resulting excess burden of disease COVID impact on GPs from Flanders = change in the number and kind of consultation (that was variable during the first year of the pandemic) <u>Another Belgian study quoted among references: Danhieux K.</u> Risk of registration errors and differences in registrations between GPs in the HER; not guarantee that patients are a representative sample for the Flemish population.; no distinction between different types of patient contact (e.g. teleconsultations versus face-to-face consultation) since this data is not collected in Intego.



References	Context	Methods	Results	Topic
			During the second wave, strong increase in the number of Covid-19 diagnoses and lab tests ordered by GPs. After a short delay the increase in acute diagnoses was followed by a decrease in radiology orders and chronic diagnoses, but this decrease was smaller than during the first wave of the pandemic. Conclusion that Covid-19 should be considered as a syndemic instead of a pandemic.	
Van Ginneken E. et al.³³ Policy brief 47 2022	WHO European region	Analysis of publications (including 'snapshots', Eurohealth articles, as well as academic papers) generated through the COVID-19 Health System Response Monitor (HSRM), available at: https://www.covid19healthsystem.org. Interview of key experts and analysis of recovery strategies in 16 Organisation for Economic Co-operation and Development (OECD) and EU countries in order to identify potential policy solutions on recovery from the backlog, Analysis of wider literature and grey sources were consulted to complement our analysis.	Halt to the number of patients being treated, thus generating greater excess demand and bigger mismatch between demand for health care services and supply of services provided, translating into longer waiting lists and waiting times. The additional cumulated number of patients on the waiting lists due to COVID-19 is commonly referred to as the care backlog. Box 4 emphasizes the critical role of resuming supply at different levels, and its importance in absorbing the backlog and reducing the waiting list.	Early and future HC service utilization (& backlog) Use systematic methods, with rigorous open peer review process All reasonable precautions have been taken by the WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The data that are available have been collected through various systems and by applying different methodologies, so the following results are indicative rather than comparable across countries.



References	Context	Methods	Results	Topic
	HSRM tool was established in March 2020 and designed in response to the COVID-19 outbreak. Now an open archive, it collected and disseminated up-to-date information on how countries, mainly in the World Health Organization (WHO) European Region, were responding to the crisis, focusing primarily on the responses of health systems. It is a joint undertaking of the WHO Regional Office for Europe, European Commission, and European Observatory on Health Systems and Policies.			
Verhoeven V. et al. ¹⁹	<u>Belgium (Flanders)</u> GPs	Semi-structured interviews with 132 GPs in Flanders, using a topic list based on the WONCA definition of core competencies in general practice. Mix of internship supervisors,	6 themes coinciding with the PC core competencies and a 7 th on personal protection: - Primary care management: few people per day face to face, only those with acute non-covid problems; More administrative workload than usual...	Belgian GPs workload Interviewers were medical students who had no experience in interviewing.



References	Context	Methods	Results	Topic
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.. 2020.	Very early in the pandemic: between 24 and 31 March 2020 (early phase of the outbreak, in a time when a new routine was not yet established	academics and GPs affiliated to university	- Person-centered care: telephone consultations and protective measurement make the job more difficult for most GPs. Also a considerable amount of time assessing fear, worry and questions, apart from the physical assessment.. - Problem-solving skills: Clinical decision-making is different, and more difficult because less information can be obtained in telephone consultations. Because there is a large focus on COVID-19, GPs think they will miss other diagnoses more frequently. Chronic problems are dealt with less effectively. Several GPs proactively telephone their chronic patients. Idem concerns for acute problems and acute psychological care. - Comprehensive care: media and GPs info (Sciensano, DM, Facebook group); less prevention activities. - Community orientation: frustration because of much of their time goes to writing sick leave certificates, digital prescriptions, writing mails and so on. Community orientation involves taking care of vulnerable and frail patients. Many GPs mention that they proactively try to anticipate certain problems in order to help people, and to coordinate actions where necessary. - Holistic view: worry about the psychosocial consequences of the outbreak, and more specifically about the lockdown measures to control it. Loneliness, depression and intrafamilial violence are seen more frequently. Problems are also detected in persons who previously had good mental health;. - Self-protection and self-care: Most GPs do not experience a psychological burden regarding themselves, but rather worry about transmitting the infection to others..	GPs, had the opportunity to read and correct their statements in their interviews, which increased trustworthiness of the findings.



References	Context	Methods	Results	Topic
Wilkinson Anna N.³⁴ 2022	Canada Family medicine	Commentary	A review of Ontario's breast, lung, colon, and cervical cancer screening programs showed that in 2020 there were 41% (951,000) fewer screening tests conducted compared with 2019. Screening volumes rebounded after May 2020, but they were decreased by 20% from prepandemic levels. Follow-up investigations for abnormal screening results were also backlogged during the shutdown. The impact of screening delays on cancer incidence and stage has been modeled, and delays have been shown to increase late-stage cancer diagnoses and mortality. Family physicians have an important opportunity to encourage their patients to resume screening activities in order to mitigate further deleterious outcomes.	Canadian future demand (cancer) Focus on cancer screening, diagnosis, follow-up and concluded that "The impact of COVID-19 on cancer is far reaching: screening backlogs, delayed workup of symptomatic patients and abnormal screening results, and delays in cancer treatment and research, all exacerbated by patient apprehension to be seen in person. It is clear that there is not only a lost cohort of screened patients, but also a subset of missed cancer diagnoses due to delays in patient presentation and assessment, leading to stage migration in those cancers that are diagnosed.
Williams, P. A. et al.³⁵ 2022	USA	American Association for Cancer Research launched several initiatives. The AACR Report on the Impact of COVID-19 on Cancer Research and Patient Care (https://www.aacr.org/professionals/research/aacr-covid-19-and-cancer-report-2022/) is one of these initiatives that presents current evidence on the burden of COVID-19 among patients with cancer and highlights the challenges as well as future opportunities created by the pandemic in cancer research and patient care.	Delays and interruptions in radiotherapies, surgeries, chemotherapies, and immunotherapies to treat patients with cancer were observed widely across the United States and globally during the pandemic. Predictive analysis shows that due to this delay, the 5-year survival rates for certain cancers including lung, pancreatic, or ovarian cancer could be reduced by 30%.	US future demand (cancer)



References	Context	Methods	Results	Topic
Williams R, Jenkins DA, et al.³⁶ 2020	UK (deprived urban population) Primary care	Retrospective cohort study using routinely collected primary care data recorded in the Salford Integrated Record between Jan 1, 2010, and May 31, 2020 47 general practices Number of first diagnoses for 4 disease groups: common mental health problems; cardiovascular and cerebrovascular disease; type 2 diabetes; cancer. New prescription of medications indicative of an underlying condition.	Substantial decrease of diagnoses of common conditions between March and May 2020, suggesting a large number of patients have undiagnosed condition. Compared with previous years, fewer diagnoses of common mental health problems (50.0% decline, 95% CI 41.1 to 56.9), circulatory system diseases (43.3% reduction, 95% CI 29.6 to 53.) and type 2 diabetes (49.0% reduction, 95% CI 23.8 to 63.1). 31 fewer cancer diagnoses were recorded, but this reduction was not statistically significant (excepted if focus in cancer diagnoses observed in May, 2020). Lower observed number of first prescriptions of medicines commonly used to treat the four disease groups than the expected number between March 1 and May 31, 2020.	UK PCs workload (diagnosis of common physical and mental health conditions) Early period in the pandemic Results not generalizable to other population (because deprived with lack opportunity for virtual access to GPS)
Withy K. et al.³⁷ Hawai'i Physician Workforce Assessment 2020. 2022	Hawai'i US Physicians 2020 Primary care included: Family Medicine, General Internal Medicine, General Practice, Geriatrics, and Pediatrics (General)	Analysis of data from the 2020 Physician Workforce Assessment. The supply of physicians in Hawai'i is estimated annually using surveys, internet searches, and direct calling of physician offices or other publicly available phone numbers. 7221 physician (89%) completed at least part of survey	In 2020, primary care physicians constituted 29% of the state's physician population. A total of 989 offices responded to the telephone question on COVID, with 415 physician offices, or 42%, reporting that the pandemic caused practice disruptions (temporary and permanent clinic closures, early retirement, full or partial dependence on telehealth services, and reduced office hours and patient volume). Reasons given were safety and decreased patient volume. Other disruptions mentioned less often included changes in protocol and increased staff training, as well as travel restrictions between offices.	Hawai'i workload Since the demand for physician services is difficult to assess, the authors purchased a demand model from the IHS Markit also used in US (London, United Kingdom, https://ihs-markit.com/) .
Xu Z. et al.³⁸	China GPs First 6 months of pandemic (included a 60-day lockdown period)	Retrospective observational cohort study to evaluate the impact of the COVID-19 pandemic on the pattern of primary care consultations within a Shanghai health district.	Substantial reduction in patient visits, associated with increased median age, reduced reappointments and waiting times, but increased costs per visit during the first wave of the pandemic in the first 6 months of 2020.	Chinese primary care workload COVID impact on GPs offer = reduction of patient visits, reappointment and waiting time but increased costs per visit.



References	Context	Methods	Results	Topic
The Impact of COVID-19 on Primary Care General Practice Consultations in a Teaching Hospital in Shanghai, China. 2021		With EMR data on patient visits to general practitioners within the Tongren Hospital network. Comparison first 6 months of 2020 with first 6 months of 2019 to evaluate the impact of the COVID-19 pandemic on the pattern of primary care consultations within a Shanghai health district.	The most striking visit reductions were in cardiovascular, respiratory, endocrine, and gastrointestinal diseases. Psychological disorders increased following lockdown, but there was also a dramatic fall in consultations for depression.	Context different from Belgium (primary care centers within hospital)

3.3. Impact on GPs mental health

Table 3 – Brief description of the included publications related to impact on GPs mental health

References	Context	Methods	Results	Topic
ASPE⁵ 2022	USA Hospital and outpatient clinician workforce. 2 years of pandemics	Combination of a literature review and primary analysis of data from the Census Bureau, Bureau of Labor Statistics, and other sources.	HCW stress, burn out, job dissatisfaction, etc. with sometimes early retirement or job change (= increased shortage)	HCW mental health 2 years of the pandemics Not specific to GPs
Coenen L. et al.²⁰ 2022	<u>Belgium (Flanders)</u> GPs Period March - September 2020.	Online survey to GP trainers and trainees (survey sent out to all GP trainers and their trainees in Flanders). 216 (response 25%) GP trainees and 311 (response 26%) trainers participated. 26% considered as reasonable response rate for online surveys and sufficient for a confidence level of at least 80%.	Most of the GP trainees (75%, n = 162) and trainers (71%, n = 221) experienced more stress at work. Fear for the virus itself, including a lack of knowledge on the COVID-19 pathology. Main fear = getting infected themselves or to infect their close contacts (until to avoid personal contact with their peers, despite their emotional needs).	Belgian GPs trainees and trainers stress Most of the time, GP trainees are active in clinical practice (80%), where they work autonomously with daily supervision of a GP trainer.



References	Context	Methods	Results	Topic
			Motivating factors very similar for GP trainees and trainers (mutual support, and secondary support came from other direct colleagues and peers in formal and mostly informal discussions). <i>An important sense of solidarity amongst GPs from different practices was established during the pandemic.</i> Telehealth consulting = major challenge. Missing physical contact and as a result compromised patient's understanding. Fear of missing important diagnoses besides COVID-19 GP trainees experienced more difficulties reaching out to vulnerable patient groups because of the new ways of consulting. All those elements were perceived as a strain on the work- (private) life balance according to GP trainers.(stress)	
Collins C. et al.³⁹ 2022	33 countries GPs Between November 2020 and December 2021 (except earlier for Belgium)	Survey by online self-reported questionnaire among GP practices 37 European countries and Israel. Questionnaire developed at Ghent University in multiple phases, including a pilot study among 159 general practices in Flanders (Belgium) Data collected between November 2020 and December 2021, except for Belgium, where data were partially collected earlier	3711 GPs respondents (28%) from 33 countries. eWBI scores ranged from -2 to 9, with a median of 3. Using a cutoff of ≥ 2, 64.5% of respondents were considered at risk of distress. GPs with less experience, in smaller practices, and with more vulnerable patient populations were at a higher risk of distress. Significant differences in wellbeing scores were noted between countries. Collaboration from other practices and perception of having adequate governmental support were significant protective factors for distress.	GPs mental health COVID impact = more distress for GPs Practice- and system-level organizational factors are needed to enhance wellbeing and support primary care physicians.
Colombo F. et al.⁴⁰ Worldbank 2021	International, including non-industrialized countries. All HC system Almost 2 years of pandemic	Narrative report	Between 40% and two thirds of surveyed HCWs in a number of countries reported mental health problems during the pandemic (OECD Health at a Glance). WHO estimated around 115,000 deaths among health and care workers between January 2020 and May 2021.	HCWs mental health COVID impact = highlighting of the consequences of years of under-investment in health systems.



References	Context	Methods	Results	Topic
Desborough et al.⁴¹ 2021	International (11 countries) PCPs include family doctors (general practitioners and family physicians), nurses, nurse practitioners, community health workers and allied health practitioners.	Rapid review (in PubMed/MEDLINE, PROQUEST and Google Scholar, hand-searched reference lists of included studies, and included research identified through professional contacts) of lessons learnt from previous infectious disease epidemics for primary care, and their relevance to COVID-19.	31 publications of four epidemics in 11 countries. High level of anxiety and fear for them and families and others. fear of lost income, Relevant info and training and use of PPE alleviate stress.	Rapid review with one reviewer to screen and extract data and may be bias Cited by 18 publications Focus on the interaction between PC and PH.
Fernández-Aguilar C. et al.²² 2021 Has COVID-19 changed the workload for primary care physicians? The case of Spain.	Spain Primary Health Centers of the Granada-Metropolitan Health district (Andalusia). GPs Early in the pandemic (height of the initial peak of the COVID-19 pandemic)	Subjective measurement procedure of the physician workload during (April 2020) and before the COVID-19 crisis (March and April 2017).. Use of the National Aeronautics and Space Administration–Task Load Index (NASA-TLX) questionnaire. A total of 102 records from 16 doctors from a primary health center in 2017 vs 132 records from 30 general practitioners in 2020	Significantly higher workload during COVID-19 in relation to a previous situation (66.1% (SD 16.3) versus 48.6% (SD 12.6) before COVID-19) (p < 0.001). All the dimensions of the NASA-TLX test suffered an increase during the COVID-19, this increase being higher in the physical, temporal and frustration levels. Work overload and the emotional state of health workers is one of the many repercussions of the COVID-19 pandemic. Most important increase in absolute terms = increase in the temporal and demand followed by the mental, effort and physical demand. It worth noting that the dimensions with the strongest changes are physical demand (almost double), temporal demand (more than double) and frustration (almost double). No effect of gender or years of experience but a significant positive correlation was reported between workload and age or existence of family members admitted by COVID-19. In the opposite, the higher the percentage of telematic consultations, the lower workload	COVID impact = mental overload in PHC physicians in Spain. Limitation: representativeness and subjective measurement Figure 3 provides proposals or intervention measures to reduce or improve the physician's work overload



References	Context	Methods	Results	Topic
Groenewegen P. et al.⁶ 2022 PriCov-19	The Nederland GPs March 2021	International survey for GPs practices on general information about the practice, patient flow, infection prevention, information processing, collaboration, collegiality and concern for one's own well-being, and the policy of government and professional organizations (started in 2020 by the expertisecentrum Quality and Safety Ghent van de Vakgroep Volksgezondheid en Eerstelijnszorg van de Universiteit Gent (with EQUIP, EGPRN and EFPC)	In the NL (155 respondents i.e. 17%): - the measures for infection prevention limited the physical patient flow, but video calling rose in a short time from 6% to 65% of the practices. - the pandemic put pressure on patient safety due to that patients were more reluctant to practice visits. - the pandemic has made cooperation with other general practitioners practices improved. the practices felt well supported by the professional associations in terms of speed and quality of the information	NL GPs mental health, support, collaboration...) Subjective measure
Jefferson L. et al.⁴² 2022	International GPs One year of pandemic	Mixed-methods systematic review 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. Six databases (MEDLINE, Embase, PsycINFO, Science Citation Index, Social Science Citation Index, and Emerging Sources) QA with the CASP tool First search November 2020, Updated on June 2021	31 studies included. Impact on psychological wellbeing, with some GPs experiencing stress, burnout, anxiety, depression, fear of COVID-19, lower job satisfaction, and physical symptoms. Among five studies of mixed groups of healthcare workers, primary care doctors reported higher levels of personal perceived stress, worse burnout scores, worse depression scores, greater reporting of post-traumatic stress symptoms and lower job satisfaction than other specialty groups. Studies reported gender and age differences: women GPs had poorer psychological outcomes across all domains, and experiences according to age varied across studies, with higher stress reported in older groups but more anxiety and depression in younger groups. Multiple sources of stress identified including changed working practices; risk, exposure, and inadequate personal protective equipment (PPE); information overload; pandemic preparedness; and cohesion across sectors	GPs mental health COVID impact on GPs = psychological impact as stress, burnout, anxiety... Use of outcome measures and reporting practice varied greatly; lack of longitudinal or 'pre-pandemic' comparators... Some limitations in consideration of confounders and in reporting across studies, with results pertaining to GPs often not disentangled from other HCW, Most studies used cross-sectional survey designs so there may be selection bias in the types of GPs responding. The lack of longitudinal cohort designs limits the ability to assess the impact of the pandemic, Need to standardise tools across studies, particularly around workplace stress and burnout.



References	Context	Methods	Results	Topic
Jefferson L. et al.⁴³ medRxiv 2022	UK GPs	In-depth qualitative remote interviews with NHS GPs to explore the lived experience of UK GPs during COVID-19, and the pandemic's impact on their psychological wellbeing Time of data collection (Spring/Summer 2021)	40 GPs interviewed generally negative sentiment and many displayed signs of psychological distress and burnout. Causes of stress and anxiety : personal risk, workload, practice changes, public perceptions and leadership, teamworking and wider collaboration and personal challenges. Facilitators of their wellbeing: sources of support and plans to reduce clinical hours or change career path. Conclusions potential impact on workforce retention and quality of care	UK GPs psychological wellbeing Sub-group differences by gender and age; highlighting a potential need for further research and support targeted at specific groups. Findings are necessarily limited to the time of data collection (Spring/Summer 2021); further tensions in general practice have since arisen, particularly regarding negative and misleading media portrayal.
Luzet J. et al.⁴⁴ 2021	France GPs Lockdown	Online survey (self-completion of the Spielberg validated questionnaire the STAI-Y for anxiety) to measure the anxiety levels and its determinants of GPs in a French department during the first COVID-19 pandemic containment in August 2020 Focus group with five GPs for experience, work organizations, and doctor/patient relationship.	Of the 60 general practitioners included in the survey (among 250 contacted) = 2.6% of the 2329 GPs in the department Nearly 40% had high to very high levels of anxiety. Determinants of this anxiety = female gender, unsatisfactory working conditions, constraints required to work reorganization (consultations and waiting room), and worry of not being able to respond to the fears and questions of patients, thus a lower decision latitude in their work.	French GPs anxiety and other feelings Focus on the lockdown period. Selection bias (volunteer)
Mahlknecht A. et al.⁹ 2022	Italy GPs	2-time cross-sectional online survey involving GPs in a northern Italian region in September 2020 and March/April 2021 84 GPs (29.6% of invited GPs) in the first survey, and 41 GPs (14.4%) in the second survey.	Psychological distress among GPs tended to increase over time; female GPs were more affected in the first survey. In the second survey, the GPs felt more prepared to self-protection and outpatient treatment of Covid-affected patients.	Italian GPs stress Generalizability limited by (specific Italian region). Response rate low compromising validity and representativeness of the results but comparable to other GP surveys. Potential selection bias by overrepresentation of GPs who had been infected or who suffered from particularly high distress.



References	Context	Methods	Results	Topic
				Some parameters, such as psychological disorders among GPs, are self-estimated and are therefore not fully reliable epidemiological measures. The applied questionnaire was developed ad hoc and did not include validated instruments
Mandal A, Purkey E.²⁴ 2022	Canada (Ontario) Rural GPs (family physicians with regular duties in at least two clinical settings (i.e., emergency department, clinics, hospitals, long-term care, etc.)) <u>1/4 Canadian physicians and residents reported high levels of burnout before the pandemic.</u>	Survey between May and early August 2021	25 physicians Increased levels of perceived depression (48%), anxiety (72%), and stress (92%), as well as decreased sense of overall mental wellbeing (80%) compared to before the pandemic. 7 themes: psychological impact of the COVID-19; <u>Excessive increase in workload and responsibilities</u> ; management of risk of infection; management of limited resources; impact on familial, professional and public relationship; use of coping strategies; experience accessing physician wellness resources. Many participants reported greater anxiety because of the unpredictability of their workload with the changing nature of the pandemic (which cause anxiety). Concerns of the physicians included fearing that they were providing inferior quality of care virtually, and frustration dealing with patients who were resistant to this change. However, one participant reported enjoying virtual care as they were able to work from the comfort of their home. Some participants disclosed that having to deal with so many mental health appointments contributed to second-hand anxiety, compassion fatigue, and/or exhaustion.	Canadian rural GPs mental health Few participants and risk of bias (more stressed)
OECD¹⁶	International All HCS	International comparison to describe country responses to COVID-19.	High level of stress, fatigue and psychological distress	International overview HCS & PHC



References	Context	Methods	Results	Topic
Health at a Glance: Europe 2020 : State of Health in the EU Cycle	First wave of the pandemic (first ten months of the year)		<i>The exceptional workload and psychological drain on health professionals led to a considerable mental health burden, with possible long-term effects for their well-being.</i>	No info on the expected GPs quota for the future but some general recommendations for policy makers to improve resilience of health systems to the (future) health crisis. Early period of the pandemic. "initial findings", not a definitive review".
Schaffler-Schaden D. et al.³⁰ 2022	Austria and Germany GPs Early period of the pandemic	Online survey among 723 GPs in Austria and Germany over a period of 12 weeks (April 3–July 2, 2020).	The proportion of GPs that felt helpless when caring for patients with COVID-19 and that were sometimes unsure whether they were doing everything right when treating such patients decreased during the course of the longitudinal survey Furthermore, the proportion of GPs that were worried they might unknowingly infect their patients and that were worried about how the pandemic would affect their and their employees' economic outlook decreased during the course of the longitudinal survey. Worries less frequent in male GPs.	Austrian and German PCP workload Questionnaire developed in a very short time and maybe not have covered all relevant aspects; No response rate; GPs lost to FU may be less affected by the pandemic; Possible selection and interpretation bias.
Seda-Gombau G. et al.⁴⁵ Impact of the covid-19 pandemic on burnout in primary care physicians in catalonia 2021	Spain (Barcelona metropolitan area) Primary care physicians Early in the pandemic 2 April and 4 May 2020 (two waves).	Various surveys November 2016 (T1), January 2019 (T2), and October 2020 (T3) Participation of 150 professionals but 40 have responded to the 3 questionnaires.	The percentage of physicians with high burnout for all domains, has increased five-fold since the onset of the COVID-19 pandemic (in January 2019, 10% of the physicians scored high in all three domains, whereas in October 2020, this percentage scored to 50%). The biggest changes between T2 and T3 occur regarding personal accomplishment. Age (older), having children (no children), and sleep (disturbed) = explanatory factors.	Spanish GPs burn-out Quoted a similar study in Portugal:40 PHC physician Baptista, S.; https://pmc/articles/PMC8044566/ (accessed on 28 July 2021). Selection bias
Taylor MK. et al.¹⁷ 2022	International Experts in primary care	Analysis of one question* part of a survey compiling PHC experts' perceptions of how their countries adapted to the COVID-19 pandemic.	Large amounts of uncertainty, stress...;	PHC mental health



References	Context	Methods	Results	Topic
	Early in the pandemic (Survey from April 15 – May, 2020)	“Since the first identified case of COVID-19 in your country, have the roles of a typical PHC team in your country changed?” 339 unique responses recorded for the open-text portion of the question from 69 countries.		Respondents are not representative of their respective countries' policies or protocols, nor are they necessarily representative of other primary care clinicians' experiences within those countries
Turabian JL.¹⁸ 2020	Spain (Toledo) All HCWs but analysis on PHC Very early period of pandemic	Narrative; Author experience as GP; Personal point of view	Implication on HCP: physical and mental exhaustion, torment of difficult triage decisions, and pain of losing patients and colleagues, all in addition to the infection risk.	Spanish GPS health Poor design. Very early period of pandemic.
Van Ginneken E. et al.³³ Addressing backlogs and managing waiting lists during and beyond the COVID-19 pandemic Policy brief 47 2022	WHO European region HSRM tool	Analysis of publications (including 'snapshots', Eurohealth articles, as well as academic papers) generated through the COVID-19 Health System Response Monitor (HSRM), available at: https://www.covid19healthsystem.org. Interview of key experts and analysis of recovery strategies in 16 Organisation for Economic Co-operation and Development (OECD) and EU countries in order to identify potential policy solutions on recovery from the backlog, Analysis of wider literature and grey sources were consulted to complement our analysis.	Several documented examples of staff struggling with the workload. For example, in England, 44% of health care professionals reported feeling unwell due to work-related stress over the previous year, a 9% increase from 2019 (NHS Staff Survey Co-ordination Centre, 2021). Likewise, in Spain, an April 2020 survey of health care professionals found that over half of respondents reported symptoms of anxiety (59%) and/or post-traumatic stress disorder (57%), and just under half (46%) experienced depression (Luceño-Moreno et al., 2020). These examples highlight the need for creating better working conditions for health workers.	HCWs stress/anxiety Use systematic methods, with rigorous open peer review process All reasonable precautions have been taken by the WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The data that are available have been collected through various systems and by applying different methodologies, so the following results are indicative rather than comparable across countries.
Vanhaecht K. et al.⁴⁶ 2021	<u>Belgium</u> (Flanders)	A cross-sectional survey study, 4509 HCWs, including primary care practices (25.7%).	Increase of all symptoms (e.g. hypervigilance, fear, stress...) Three levels of support by organisations : 1. Basic support with adequate working conditions (PPE) clarify work hours, communicate current	Belgian HCWs mental health During the two first waves of the pandemic.



References	Context	Methods	Results	Topic
	HCWs (40.6%), nurses (33.4%), physicians (13.4%) and management staff (12.2%). Early in the pandemic 2 April and 4 May 2020 (two waves).		best practices, share challenges and successes. 2. If this is insufficient, support by focused (person-to-person) non-specialized support. Referring the HCW to specialized services	Leaving profession is one item studied and showed to be increased during the COVID-19 waves. No subgroup analysis for primary care physicians provided. Risk of selection bias, recall bias (question on symptoms before and during the waves asked at the same moment)...
Verhoeven V. et al. ¹⁹ 2020.	<u>Belgium (Flanders)</u> GPs Very early in the pandemic: between 24 and 31 March 2020 (early phase of the outbreak, in a time when a new routine was not yet established	Semi-structured interviews with 132 GPs in Flanders, using a topic list based on the WONCA definition of core competencies in general practice	6 themes coinciding with the PC core competencies and a 7 th on personal protection (see chapter workload). Self-protection and self-care: Most GPs do not experience a psychological burden regarding themselves, but rather worry about transmitting the infection to others. Furthermore, GPs worry about not being able to function anymore and adding to their colleagues' work.	Belgian GPs worries Interviewers were medical students who had no experience in interviewing. GPs, had the opportunity to read and correct their statements in their interviews, which increased trustworthiness of the findings.
Zhou A.Y. et al. ⁴⁷ 2022 64:1 (e12311)	UK Junior doctors who were currently engaging in post-graduate training in the North West region of England Early in the pandemic	Online survey sent to 1000 junior doctors From 10/07/20 to 04/08/20	326 responses (33%). <u>In general practice training for 24%</u> Of the top 10 stressors rated by junior doctors, 60% were related to the pandemic. Multiple stressors were found to be associated with the burnout dimensions. Fatigue, pandemic-related workload increase, and feeling isolated had the strongest associations with EE, whereas fatigue, uncertainty around COVID-19 information and doing unproductive tasks had the strongest associations with DP. Working beyond normal scope due to COVID-19, not confident in own ability and not feeling valued were found to have the strongest associations with PA.	UK junior physicians burn-out After graduation, all junior doctors undertake a 2-year Foundation training rotation that provides experience in various specialties. Following this, junior doctors will join a specialty pathway which usually involves core training (2–3 years) followed by more specialised training (3–6 years). General Practice trainees will engage in a 3-year programme after completing their Foundation training, whereas specialty training can take more than 8 years.



References	Context	Methods	Results	Topic
				Response rate similar to other studies Possible response bias

3.4. Impact on GPs workforce

Table 4 – Brief description of the included publications related to impact on GPs workforce

References	Context	Methods	Results	Topic
Alami H. et al.² 2021	Quebec (Canada) Whole HC system Health reform in 2015 with budget decrease (by 33%) Early in the pandemic (mid-March to mid-May 2020)	Field observations and available data on the first wave of the pandemic.	Insufficient Workforce in public health (proportion of public health funding in Quebec is 2.2%, which is less than the recommended 5–6%), in hospitals and clinics (telehealth was rapidly deployed to ensure coverage of services and sharing of expertise), in long term care facilities (In 2018–2019, only 71% of the needs for routine care and services were met due to insufficient resources). To overcome this gap, more than 2,000 medical specialists and 400 family physicians were mobilized in CHSLDs.	Canadian HCS shortage Not specific to GPs Several global recommendations in the text
ASPE⁵ 2022	USA Hospital and outpatient clinician workforce. 2 years of pandemics	Combination of a literature review and primary analysis of data from the Census Bureau, Bureau of Labor Statistics, and other sources.	Declined total employment in HC services: In May 2020, approximately 15% of hospital workers reported being unable to work at some time in the past 4 weeks because their employer closed or lost business due to the pandemic, compared to 23 % of non-hospital health care workers. These numbers returned to relatively close to pre-pandemic numbers and stayed there by early 2021.	US HCWs shortage 2 years of the pandemics



References	Context	Methods	Results	Topic
			Contributors of shortage = Aging HCW, availability of training (mainly in nursing because applicants not accepted at nursing schools), underrepresentation of certain subgroups of HCW, impact of long COVID on HCW, increase need of care for patients after pandemic (long COVID or not). Shortages and maldistribution of HCW (particularly of certain types as primary health care providers, dentists, psychiatrists as well as in certain areas), EVEN BEFORE the pandemic. Positive point is the increase of students in HC training since the pandemic.	HRSA's BHW releases reports that project the supply and demand for various types of HCW as well as by state and by rurality, although their estimates assume that the health care system is static and do not account for potential changes in how care may be provided over time (these types of assumptions are necessary but limit the ability of predictive modeling to generate accurate long-term workforce capacity projections)
Baris E et al.⁴⁸ 2022 Worldbank	International, including non-industrialized countries.	Peer-reviewed and grey literature, as well as data sources from the World Bank, OECD, WHO, other specialized UN agencies, and the Institute for Health Metrics and Evaluation (IHME)	<i>Almost all wealthy countries have a “sufficient” number of health professionals—defined by the WHO as more than 10 medical doctors, 40 nurses/midwifery personnel, 5 dentists, and 5 pharmacists per 10,000 people (Roberts 1979). Nevertheless, physicians’ reputational and financial incentives often favor specialization, which creates a scarcity of general practitioners. Generalists continue to decline as a share of all physicians, and in some countries, the number of geriatric trainees has stagnated (OECD 2020a). Medical students face strong financial incentives to avoid general practice or geriatrics in favor of more lucrative specialties.</i> <i>The inadequacy of simply expanding generalist training demands alternative approaches to attract medical students to the field. Several incentive approaches can be used, including lower costs to obtain certification, subsidized medical education, or adjusted reimbursement rates from central payers to lower salary differentials.</i>	Low attractiveness of general practice Broad policy recommendations for governments and actions for the global health community, including the World Bank: Concerns all countries, low, mid and high incomes.



References	Context	Methods	Results	Topic
Colombo F. et al. ⁴⁰ Worldbank 2021	International, including non-industrialized countries. All HC system Almost 2 years of pandemic	Narrative report	Efforts to strengthen health system resilience supported by OECD, world bank, etc. Front line services remain weak yet less than one in six dollars is spent on primary health care even in high-income countries. WHO has estimated the global health workers shortage at 18 million before the pandemic, in particular in Africa and South-East Asia. During the pandemic, 66% of countries reported insufficient staffing as the reason for service disruptions. Even in high-income countries, the lack of health and long-term care staff has proved to be more of a binding constraint than hospital beds and equipment.	HCWs shortage COVID impact = highlighting of the consequences of years of under-investment in health systems. COVID impact = urgent need for more health workers. More details in the global report from Baris E et al.
Dill M. ⁴⁹ 2021	US All physicians	Commentary	Projected shortage of primary health care physician and specialists (from 2019 to 2034) because of aging physician workforce and a growing, aging population. <i>"Burnout from the trauma of working through the pandemic could drive physicians to retire earlier than they might otherwise have done."</i> One interesting CCL: <i>"For the physician workforce itself, better and more equitable support systems are needed to help improve work-life balance and ensure a more diverse future workforce."</i>	US physicians shortage Poor design COVID-19 pandemic = exacerbation of the US doctor shortages, pressures disproportionately affecting women physicians and physicians of color, financial challenges of delayed care (mainly on smaller physician private practices and rural hospitals), widespread adoption of telehealth. Context different from Belgium
Fleming P. et al. ⁵⁰ 2022	Ireland All level of care but categorisation organised by acute and community setting. Analysis from 2008 to August 2021	Secondary analysis of anonymised aggregated national human resources data	Overall staffing levels: increase from 2014 Changes by staff group: sharp increase across all categories likely to be a direct response to the COVID-19 pandemic, although the number of Medical and Dental staff appears to have plateaued in 2020.	Irish HCWs workforce evolution



References	Context	Methods	Results	Topic
		Comparative analysis conducted across three keys periods, namely the 'Recession period' December 31st 2008–December 31st 2014; the 'Recovery period' December 31st 2014–December 31st 2019; and the 'COVID-19 period' December 31st 2019–August 31st 2021	Acute/Community split: By August 2021, the gap had tripled with 13,645 more WTEs in acute settings compared to community, a complete reverse of the 2008 situation, when the numbers were weighted in favour of community settings. Staf reductions in community services represent staff gains for acute settings. Absence-rates: Absence reached a high at the beginning of the financial crisis in 2008 (5.8%) and dropped to a low of 4.2% during the Recovery period, while increasing substantially to 6.1% during the COVID-19 period. Redeployment during COVID-19: In April 2020, 7.2% WTE community staff were redeployed and this was eventually reduced to 1.7% by November 2020. This redeployment, at least in the short term, was recognised as placing a strain on non-COVID-19 primary care and community services. In conclusion: Concerted action including the <u>permanent redistribution of personnel</u> is required to ensure progressive and sustainable responses from recent shocks	The national dataset does not contain information related to individuals who are not directly employed by the HSE, including agency staff; GPs (of which there are approximately 3300 contracted to provide services on behalf of the HSE in Ireland); private hospitals; healthcare professionals practising privately; and the majority of care homes and residential settings.
Van Ginneken E. et al. ³³ Policy brief 47 2022	WHO region European	Analysis of publications (including 'snapshots', Eurohealth articles, as well as academic papers) generated through the COVID-19 Health System Response Monitor (HSRM), available at: https://www.covid19healthsystem.org . Interview of key experts and analysis of recovery strategies in 16 Organisation for Economic Co-operation and Development (OECD) and EU countries in order to identify potential policy solutions on recovery from the backlog,	Supply of health services determined by the availability of health workers, their productivity and provider capacity (hospital beds, operating theatres). Some countries already struggling with proportionally low numbers per population of doctors, nurses, hospital staff, available hospital beds or low productivity before the pandemic started.	HCWs shortage Use systematic methods, with rigorous open peer review process All reasonable precautions have been taken by the WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied.



References	Context	Methods	Results	Topic
		Analysis of wider literature and grey sources were consulted to complement our analysis.	COVID-19 has exposed these gaps, and may have worsened some through staff exhaustion and burnout, as well as people leaving the profession. Staff shortages have been experienced due to their being redeployed to treat COVID-19 patients and administer vaccination programmes, as well as taking sick leave due to being infected with COVID-19. Low numbers of health workers and harder working conditions make it difficult to boost the supply of health services.	The data that are available have been collected through various systems and by applying different methodologies, so the following results are indicative rather than comparable across countries.
Withy K. et al.³⁷ Hawai'i Physician Workforce Assessment 2020. 2022	Hawai'i US Physicians 2020 Primary care included: Family Medicine, General Internal Medicine, General Practice, Geriatrics, and Pediatrics (General)	Analysis of data from the 2020 Physician Workforce Assessment. The supply of physicians in Hawai'i is estimated annually using surveys, internet searches, and direct calling of physician offices or other publicly available phone numbers. 7221 physician (89%) completed at least part of survey	In 2020, primary care physicians constituted 29% of the state's physician population. The physician shortage in Hawai'i has worsened significantly with the COVID pandemic (10% of providers have retired or closed their practices since the start of the COVID-19 pandemic). COVID IMPACT: A total of 989 offices responded to the telephone question on COVID, with 415 physician offices, or 42%, reporting that the pandemic caused practice disruptions. The primary themes that were identified were: temporary and permanent clinic closures, early retirement, full or partial dependence on telehealth services, and reduced office hours and patient volume. Conclusions: The current estimated physician shortage is between 710 and 1,008 full time equivalents, Primary care has the greatest demand with a state wide shortage of 412 FTE. For Hawai'i, the family medicine and general practice demand estimated by the authors is 536 FTE (40 h/w). There were 1,45 million inhab. In Hawai'i in 2020	Hawai'i physicians shortage Physicians in Hawai'i must relicense every 2 years (with survey in the same time) Since the demand for physician services is difficult to assess, the authors purchased a demand model from the IHS Markit also used in US (London, United Kingdom, https://ihs-markit.com/) .



3.5. Propositions for the future

Table 5 – Brief description of the included publications with propositions for the future

References	Context	Methods	Results	Topic
Alami H. et al.² 2021	Quebec (Canada) Whole HC system Health reform in 2015 with budget decrease (by 33%) Early in the pandemic (mid-March to mid-May 2020)	Field observations and available data on the first wave of the pandemic.	Global recommendations • (Re)investing in and strengthening social policies: • Strengthening the health sector • Strengthening public health • Implementing a reliable health and social information system (HSIS) • Implementing an integrated, functional, and efficient telehealth network: • Promoting interprofessional work, interdisciplinarity, and intersectorality in workforce training: • Promoting the health and well-being of health care providers • Ensuring better drugs and medical equipment production capacities • Promoting pluralistic governance and adaptive leadership • Strengthening independence and agility of knowledge-based agencies Improving communication and trust in government and institutions:	Several recommendations focusing on primary care
Anderson M. et al.⁴ LSE–Lancet Commission on the future of the NHS: re-laying the foundations for an equitable and efficient health and care service after COVID-19 2021	UK NHS	Combination of an analysis of priorities for the future of the NHS that were identified before the COVID-19 pandemic with additional analysis of the COVID-19 response to derive recommendations that ensure both resilience to further major threats to health and the long-term advancement of the NHS to meet population needs.	• Many health outcomes are substantially worse in the UK than in other high-income countries • Workforce planning in the UK has historically been driven by factors on the supply side, such as recruitment and retention. However, workforce planning should also incorporate factors on the demand side, such as demography, morbidity, use of health and care services, and gross domestic product (GDP) growth. There has been an over-reliance on setting future workforce numbers by profession and less attention has been paid to requirements, such as skill mix or creating new, flexible roles.	Focus on the NHS but present many global recommendations



References	Context	Methods	Results	Topic
		The G7 countries (ie, Canada, France, Germany, Italy, Japan, the UK, and the USA [although sometimes the USA is excluded as an outlier in terms of expenditure and variation in outcomes]) and EU15 countries (ie, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the UK) in 2019 were used as standards.	- Several challenges for the NHS due to COVID-19: Addressing the growing unmet need for health services; population health and health inequalities; changing health needs: multimorbidity and mental health; financial and political context; Recommendations - Increase investment in the NHS, social care and public health - Improve resource management across health and care at national, local, and treatment level - Develop a sustainable, skilled, and inclusive health and care workforce to meet changing health and care needs - Strengthen prevention of disease and disability and preparedness to protect against major threats to health - Improve diagnosis, in circumstances where evidence exists to support early diagnosis for improved outcomes and reduced inequalities - Develop the culture, capacity, and capability to become a learning health and care system Improve integration between health, social care, and public health and across different providers, including the third sector	
Anderson M. et al.³ Securing a sustainable and fit-for-purpose UK health and care workforce. 2021	UK HCWs	UK Health policy paper with illustrative projections	Future key challenges: increasing multimorbidity, gap in supply of unpaid carers; leaving the EU. Meeting future need: integrated workforce planning; reforms to training and ways of working; promoting life-long training; tackling discrimination in the NHS; protecting staff wellbeing; adequate terms and conditions Education, training, and workforce plans have typically considered each health-care profession in isolation and have not adequately responded to changing health and care needs. The results are persistent vacancies, poor morale, and low retention. To secure a sustainable and fit-for-purpose health and care workforce, integrated workforce approaches need to be developed alongside reforms to education and training	Proposition for future HC work process Not GPs



References	Context	Methods	Results	Topic
			that reflect changes in roles and skill mix, as well as the trend towards multidisciplinary working. Enhancing career development opportunities, promoting staff wellbeing, and tackling discrimination in the NHS are all needed to improve recruitment, retention, and morale of staff. An urgent priority is to offer sufficient aftercare and support to staff who have been exposed to high-risk situations and traumatic experiences during the COVID-19 pandemic.	Through illustrative projections, the authors show that, to sustain annual growth in the workforce at approximately 2.4%, increases in NHS expenditure of 4% annually in real terms will be required. Above all, a radical long-term strategic vision is needed to ensure that the future NHS workforce is fit for purpose.
Archer S. et al.¹ Impact of the COVID-19 pandemic on cancer assessment in primary care: a qualitative study of GP views 2021	UK (East of England) GPs Early period of the pandemic	Semi-structured interviews via Zoom or Microsoft Teams. Between 7 August and 10 September 2020. Twenty-three GPs from 16 different practices.	• Adopt a proactive approach to safety netting, including follow-up telephone calls and booked appointments. • Prioritise excellent communication with patients and with colleagues across primary and secondary care settings. • Value face-to-face consultations for examinations, including in care homes and on home visits, to ensure equitable high quality care. • Maintain cancer care services in a safe secondary care environment to facilitate patient attendance and timely assessment and treatment, in order to prevent backlog and subsequent increased workload in primary care.	Recommendations to ensure safe and effective future clinical practice for primary care (cancer)
ASPE⁵ 2022	USA Hospital outpatient clinician workforce. 2 years of pandemics	Combination of a literature review and primary analysis of data from the Census Bureau, Bureau of Labor Statistics, and other sources.	Proposals: • Apply sustained public policy attention to underlying geographic and other maldistribution of workforce assets, through regulations, proposed legislation, and funding. This includes removing barriers to practicing to the top of one's license/certification, support for evidence-based telehealth, retention of COVID-19 flexibilities as appropriate, and funding for service-obligated scholarships and loan repayment. • Assure a reliable pipeline for personal protective equipment and other needed supplies and equipment	Proposition for HCWs supply 2 years of the pandemics



References	Context	Methods	Results	Topic
			• Focus increased policy attention on the paraprofessional workforce (e.g., community health workers, substance use peer support specialists, direct care personal assistants). Sustained support for reasonable work hours, staffing patterns, and wages and benefits. • Optimize existing workforce development programs to support diversity in the health professional workforce and further support the development of a diverse workforce through pipeline programs. • Provide training in graduate and continuing medical education programs on self-help strategies and ways to avoid burnout. • Assess how COVID-19 funds were specifically used to support the hospital and ambulatory care workforce to identify best public health emergency practices. • Support research that investigates long-term workforce trends arising from the pandemic and how they can be addressed including entry and departure issues, impact on facility staffing, and factors associated with health worker morale.	HRSA's BHW releases reports that project the supply and demand for various types of HCW as well as by state and by rurality, although their estimates assume that the health care system is static and do not account for potential changes in how care may be provided over time (these types of assumptions are necessary but limit the ability of predictive modeling to generate accurate long-term workforce capacity projections)
Baris E et al.⁴⁸ 2022 Worldbank	International, including non-industrialized countries.	Peer-reviewed and grey literature, as well as data sources from the World Bank, OECD, WHO, other specialized UN agencies, and the Institute for Health Metrics and Evaluation (IHME)	Argue for a robust and reimagined primary health care Why? Because characteristics of high-performing PHC are the most critical for managing the pressures coming to bear on health systems in the post-COVID world (demographic (aging) and epidemiological ((e.g. non-communicable disease) shifts, changes in technology, and citizens' evolving expectations for health care). What? Four fundamental shifts in how PHC is designed, financed, and delivered: • From dysfunctional gatekeeping to quality, comprehensive care for all • From fragmentation to people-centered integration • From inequities to fairness and accountability • From fragility to resilience (with PHC teams including public health surveillance and outreach capacity and with financial and human resource surge capacities at the local level)	Propositions for Primary care COVID impact = opportunity to reform PHC. Broad policy recommendations for governments and actions for the global health community, including the World Bank: Measurement of PHC financing, which has been a weak link in many countries, is critical. Concerns all countries, low, mid and high incomes.



References	Context	Methods	Results	Topic
			How? Three path for actions: 1. Adopting a multi-disciplinary team-based approach (at least 3 types of providers—community health workers, nurses, and GPs). 2. Reforming health care workforces (trained, deployed, managed, evaluated, and paid). Financing public-health-enabled PHC (by significant investments and financing innovations to foster team-based care; promote coordination and integration; and improve quality, outcomes, and efficiency. These emerging models, sometimes called “value-based” payments, shift clinical and financial accountability to providers by adjusting and conditioning reimbursement based on cost, quality, and patient-experience metrics.)	
Byun H, Westfall JM.⁵¹ 2022	US GPs	To describe sites of practice for family physicians to identify the potential for redeployment to a variety of settings in times of local, state, or national emergency Compute scopes of practice for 78,416 US family physicians who treat Medicare beneficiaries: volumes of services done in 2017 across six sites of service per physician (home visits, assisted living facilities, nursing homes, emergency rooms, hospitals, and office/clinic).	Overall, 16,500 family physicians already work in multiple clinic sites, and could potentially be deployed during local, state, or national emergencies. Because family physicians receive training in a variety of practice sites, the current data suggest a large share of family physicians is not practicing at the top of their training. State and federal policies, curricular interventions in graduate education and residency, as well as ongoing education and training could facilitate expansion of the multisite family physician workforce. Conclusions: Family physicians are able to move between different sites of care to meet the needs of the community. Regular certification and innovations in family medicine graduate medical education are needed.	Future US GPs training & redeployment
Coenen L. et al.²⁰ 2022	Belgium (Flanders) GPs Period March - September 2020.	Online survey to GP trainers and trainees (survey sent out to all GP trainers and their trainees in Flanders). 216 (response 25%) GP trainees and 311 (response 26%) trainers participated.	Measures such as reducing the writing of medical certificates and financial support for administrative and (para) medical support can help to reprioritize the core of GP care. The introduction of telehealth consulting and changing guidelines required new communication and organizational skills.	Propositions for Belgian GPs workload and GPs training



References	Context	Methods	Results	Topic
			COVID-19 has enhanced the use of digital learning over peer-to-peer learning and lectures. However, GP trainees and trainers preferred blended learning educational activities To ensure quality GP education during the pandemic and beyond, regular GP care should remain the core activity of GP trainees and trainers and a balance between all different learning methods should be found.	
Colombo F. et al.⁴⁰ Worldbank 2021	International, including non-industrialized countries. All HC system Almost 2 years of pandemic	Narrative report	Efforts to strengthen health system resilience supported by OECD, worldbank, etc. Front line services remain weak yet less than one in six dollars is spent on primary health care even in high-income countries. Reform for mobilizing resources for preparedness and UHC, and delivering value for money. The OECD has calculated that even in high income countries, an annual investment of 1.5% of GDP is needed to make health systems resilient enough for another major health threat of the scale of COVID-19. Changes are needed to training, deployment, management, evaluation and compensation of health care workers. Medical education should be revamped to focus on collaborative and integrated team-based care, including in primary care. Digital technologies can help with decision support, team work, task shifting and patient participation. In conclusion, call for progress on three priority areas: primary health care, sustainable financing and strengthening the health workforce.	International propositions for HCS COVID impact = highlighting of the consequences of years of under-investment in health systems. COVID impact = urgent need for more health workers. More details in the global report from Baris E et al.
Danhieux K. et al. quoted by Van den Bulck S. et al.²¹ 2020	<u>Belgium</u> (semi-rural area from Flanders) GPs, nurses, dieticians	Qualitative study in 16 primary care practices: 6 solo working, 4 monodisciplinary and 7 multidisciplinary. 21 semi-structured video interviews (doctors, nurses, dieticians).	<i>Most primary care practices were quite satisfied with the way their practice was organised and were proud of all the work they had done. Therefore, <u>they did not plan on taking other measures next time, besides increasing their stock of protection material.</u></i>	Belgian propositions for For chronic patients COVID impact on Belgian primary care providers (semi-rural area from Flanders). = chronic care difficulties . Early in the pandemic.



References	Context	Methods	Results	Topic
	During 6 weeks, starting week 12 of the pandemic	Saturation obtained after 12 interviews.	<u>Structural changes in primary care organization are needed (e.g. (1): a more systematic implementation of the CCM, which could be achieved by better training of GP's in practice management and (2) the establishment of a stable financing structure supporting staff (nurses and dieticians) so that they can play a role in managing chronic patients in times of a crisis.</u>	<u>No info on the expected GPs quota for the future but need for better organization.</u> <u>Light on pre-existing deficiencies in primary care practices.</u> Limitation: only Flanders, no quantitative data, no info on patients experience
Desborough et al.⁴¹ 2021	International (11 countries) PCPs include family doctors (general practitioners and family physicians), nurses, nurse practitioners, community health workers and allied health practitioners.	Rapid review (in PubMed/MEDLINE, PROQUEST and Google Scholar, hand-searched reference lists of included studies, and included research contacts) of lessons learnt from previous infectious disease epidemics for primary care, and their relevance to COVID-19.	31 publications of four epidemics in 11 countries. Six key lessons: (i) improve collaboration, communication and integration between public health and primary care; (ii) strengthen the primary health care system; (iii) provide consistent, coordinated and reliable information emanating from a trusted source; (iv) define the role of primary care during pandemics; (v) protect the primary care workforce and the community and (vi) evaluate the effectiveness of interventions.	Perspectives for PCPs based on past Focus on the interaction between PC and PH Rapid review with one reviewer to screen and extract data and may be bias Cited by 18 publications
De Sutter A. et al.⁵² TOGETHER WE MAKE CHANGE HAPPEN! A future for family medicine in the primary health care 2022 (22 juin)	Belgium, GPs	Green paper (collection of ideas and proposals serving as starting point for discussion and consultation with stakeholders)	Several chapters: 1. Challenges for primary care: an update with a focus on COVID-19 (life expectancy increase & family structures evolution; patients number with chronic diseases; patients expectancy e.g. in terms on information, self-management; HCWs shortage; increase of society diversity (social, culture...); scientific and technological progress; population mental health disorders; climate warming; future health crisis) 2. Macro-meso-nano: territorial development of PHC 3. In-depth analysis of GPs and other first line HCWs situation in 2022 (geographical distribution, work according competencies; attractiveness) 4. Urgent action need	Proposition for future Belgian GPs work process



References	Context	Methods	Results	Topic
			5. Action plan (practice assistant, & decrease administrative burden, new “mix” financial models; nurse in general practice; towards an interprofessional primary care network for integrated care; Belgian Integrated Health Record; Training for the future 6. Overview and conclusion	
Gray R, Sanders C.⁵³ A reflection on the impact of COVID-19 on primary care in the United Kingdom. 2020	UK 1 GP* Very early period of the pandemic (April 2020) *In UK, a GP is a primary care physician “who works in a multi-professional team providing primary acute and continuing care to individuals and families in their home, in the practice or hospital.”	Discussion paper based on the experience of one of the authors working as a GP during the pandemic in UK and returning to work after a period of ill health due to burn out and then suspected COVID-19.	Implication for future: Ways of working: supporting the workforce (modifying the workload to make it more manageable; paying attention to the health of HCW; etc.); remote consultation and communication; regular team meeting; integrated care Challenging systems	Proposition for future GPs work process



References	Context	Methods	Results	Topic
Groenewegen P. et al.⁶ 2022 PriCov-19	The Nederland GPs March 2021	International survey for GPs practices on general information about the practice, patient flow, infection prevention, information processing, collaboration, collegiality and concern for one's own well-being, and the policy of government and professional organizations (started in 2020 by the expertisecentrum Quality and Safety Ghent van de Vakgroep Volksgezondheid en Eerstelijnszorg van de Universiteit Gent (with EQUIP, EGPRN and EFPC)	In the NL (155 respondents i.e. 17%): • need of changes in general practices, e.g. more cooperation with the public health care and the social domain. • introduction of digital healthcare applications, especially electronic consultations. • Development of new guidelines and adaptation of existing ones, thanks in part to good support from professional organisations.	Propositions for NL GPs
Matenge S. et al.¹⁰ Ensuring the continuation of routine primary care during the COVID-19 pandemic: a review of the international literature. 2022	International (including 2 Belgian studies) Primary care Early in the pandemic	Rapid literature review using PubMed/MEDLINE, SCOPUS, and Cochrane. 15 December 2020	17 studies included, low quality A range of challenges experienced by patients and practitioners, mostly on telehealth use including disparities in access and practical difficulties in assessing patient, staff shortage and redeployment, personal protective equipment shortages, and financial solvency of medical practices. While this review identified key strategies used to maintain the provision of routine primary care during the pandemic, further research is needed to evaluate the effectiveness of new models of service delivery, including PCPs' experiences and perceptions, patient reported outcomes, and costs.	International challenges No gray literature, publications only in English Exclusion of publication on telehealth but theme mentioned within the analysis Included Verhoeven and Danhieux



References	Context	Methods	Results	Topic
Mughal F. et al.¹² 2021	Europe PHC	Commentary; narrative review	Priorities include reducing regressive out of pocket costs incurred in accessing primary care in some countries, greater awareness of models of good practice in patient-centred care, and co-producing solutions with patients. There are many potential benefits from pan-European collaboration: enabling knowledge sharing across borders is vital. There is also the need for sustained investment in robust, reliable, and secure information technology infrastructure that allows clinicians and patients the opportunity to undertake remote consultations safely aligning to data protection principles.	Propositions for PHC Poor quality Quoted Verhoeven
Mughal F. et al.¹³ 2021	UK (and international examples) Primary care services	Commentary; narrative review to outline the impact COVID-19 on the delivery of primary health care, and on primary care teams, and describe the NHS response	In post-COVID context, need of refocusing on the management of chronic conditions, cancers and mental illnesses. General recommendations for primary care for COVID-19 and future unknown pandemics : adequate financing, invest in primary care, embedding in local areas, support of well-being of PHC providers, evaluation of remote consulting, transfer knowledge to less well-developed primary care systems across countries, evaluation of COVID-19 primary care response and plan in preparation for future infection pandemics and health emergencies, primary and community care research.	Recommendations for UK PHC
Parkinson A. et al.²⁶ 2022	Australia Primary care	Narrative review	Lessons learned from other countries: • Telehealth services have been key to supporting chronic disease management • Supporting patients to self-manage requires well-resourced and supported teams • Proactive care that benefits patients and mitigates risk • Community partnerships offer opportunities for innovation	Lessons learned for PHC work process (chronic disease management) Poor design (no method described)



References	Context	Methods	Results	Topic
			COVID-19 has highlighted timely opportunities for primary care reform	
Seda-Gombau G. et al.⁴⁵ 2021	Spain (Barcelona metropolitan area) Primary care physicians Early in the pandemic 2 April and 4 May 2020 (two waves).	Various surveys November 2016 (T1), January 2019 (T2), and October 2020 (T3) Participation of 150 professionals but 40 have responded to the 3 questionnaires.	Some propositions from professional associations and scientific societies :10 general measures. In brief, measures aimed to improve the current situation of PHPs should: - Establish a new social and political agreement to provide much needed additional resources; - Transform organizational models of primary care centres, making them more adaptable (improving leadership and decision-making) and improving their coordination with specialists and hospitals; - Empower primary care professionals with more self-management, training, and opportunities; - Reduce paperwork; - Promote and develop the values of primary healthcare	Spanish propositions for PCPs
Van Ginneken E. et al.³³ Policy brief 47 2022	WHO European region	Analysis of publications (including 'snapshots', Eurohealth articles, as well as academic papers) generated through the COVID-19 Health System Response Monitor (HSRM), available at: https://www.covid19healthsystem.org . Interview of key experts and analysis of recovery strategies in 16 Organisation for Economic Co-operation and Development (OECD) and EU countries in order to identify potential policy solutions on recovery from the backlog, Analysis of wider literature and grey sources were consulted to complement our analysis.	Since cost of treating patients in a safe (COVID-free) environment gone up due, (for example, to tighter hygiene protocols during surgery), the same resources now generate lower levels of supply on top of the reduced supply due to capacity being absorbed to treat COVID-19 patients. This suggests that there may be scope for reorganizing and optimizing surgical scheduling and introducing new medical technologies. Digital solutions may also help in mitigating the backlog, but this can only be applied in specific settings (e.g. some primary care, and routine consultations in secondary care where a physical examination is not required).	Future digital solutions Use systematic methods, with rigorous open peer review process All reasonable precautions have been taken by the WHO to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The data that are available have been collected through various systems and by applying different methodologies, so the following results are indicative rather than comparable across countries.



References	Context	Methods	Results	Topic
Verhoeven V. et al.¹⁹ 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.. 2020.	Belgium (Flanders) GPs Very early in the pandemic: between 24 and 31 March 2020 (early phase of the outbreak, in a time when a new routine was not yet established	Semi-structured interviews with 132 GPs in Flanders, using a topic list based on the WONCA definition of core competencies in general practice	Teaching and role modelling within a clinical environment have been suspended for a yet uncertain period of time. Involving students in telehealth, creating virtual cases and deferring clinical rotations are possible solutions; thorough evaluation of these will show whether in these circumstances students are able to develop their necessary skills. We seized the opportunity to involve students, who could not do their internships, in this study, and to show them the changing primary care landscape through researchers' eyes. This has led to interesting self-reflections which will be collected in the context of another project. Scientific research is an indispensable source of information to tailor an effective response to health crises. However, the window of opportunity for data collection is narrow. Our own suboptimal research decisions reflect this lack of time. Preparedness plans for research as well as for clinical practice can support effective research in the future and should address political, ethical, administrative, contractual, regulatory, logistic, economic and societal factors that influence research during an outbreak	Proposition for training and research
Withy K. et al.³⁷ 2022	Hawai'i US Physicians 2020 Primary care included: Family Medicine, General Internal Medicine, General Practice, Geriatrics, and Pediatrics (General)	Analysis of data from the 2020 Physician Workforce Assessment. The supply of physicians in Hawai'i is estimated annually using surveys, internet searches, and direct calling of physician offices or other publicly available phone numbers. 7221 physician (89%) completed at least part of survey	In order to increase the physician population of Hawai'i, several actions must be taken - Increasing recruitment of local students to medical school and expansion of training, especially to rural communities; - Increasing reimbursement as private practice physicians report difficulty (practice assistance to share costs for care coordination, billing, and office management, loan repayment, low interest loans, rural payment differentials, increased Medicare rates).	Propositions for decreasing physician shortage



References	Context	Methods	Results	Topic
			- Increasing job satisfaction and physician retention on all islands.	



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COLOPHON

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