PHENOMENOLOGICAL STUDY OF POSTGRADUATE TRAINEES' EXPERIENCES WITH MENTAL HEALTH WELL-BEING DURING COVID-19 PANDEMIC

FINAL REPORT

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OFFICE OF PROFESSIONAL & EDUCATIONAL DEVELOPMENT

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Executive Summary

This is the report of a phenomenological study of postgraduate trainees' experiences relating to well-being during the COVID-19 pandemic. The study was conducted between December 2021 and February 2023 by the Office of Professional and Educational Development (OPED), Faculty of Medicine, Memorial University. The Workplace Health, Safety and Compensation Commission (WorkplaceNL) provided funding in support of this study.

The research objectives were to:

1. Identify and describe the perceptions, experiences, and challenges of postgraduate trainees in meeting work and training commitments during the COVID-19 pandemic,
2. Identify coping mechanisms and supports available to and utilized by postgraduate trainees during the pandemic, and
3. Uncover opportunities for enhancing support systems for postgraduate trainees in coping with psychological, emotional, and social stressors and challenges during times of a public health emergency.

The study was undertaken by collecting information and data using the following methods:

- A literature review comprised of peer-reviewed journal articles published between March 2020 – June 2022, and
- Resident interviews with N= 8 residents spanning a variety of programs, and academic years.

Key Findings

The COVID-19 pandemic has created high levels of concern and stress around the world. COVID-19 has threatened not only the physical health, but also the psychological, emotional, and social health of healthcare workers (HCWs). Sources of distress amongst HCWs during the pandemic may include feelings of vulnerability or loss of control and concerns about their own health, spread of the virus, the health of family and friends, changes in work, and being isolated.

Postgraduate trainees (or "residents") performed an important clinical service in the Canadian healthcare system in the provision of front-line clinical care throughout the COVID-19 pandemic. Postgraduate trainees are medical doctors who have graduated from medical

school, Canadian or international, and have commenced the vocational aspect of their training pathway. Trainees are among the most vulnerable HCWs.

Mental health and well-being is an important workplace safety consideration. The pandemic has expounded the stressors placed on postgraduate medical trainees. The combined pressure and stress of training and working during a pandemic have introduced different and unique forms of psychological and emotional stressors for these individuals.

Throughout the literature, the mobilization of postgraduate trainees to high demand departments and thus a high likelihood of encountering suspected or confirmed cases of COVID-19 was a prevalent concern identified by postgraduate trainees during the pandemic. During the pandemic, trainees were impacted by being redeployed, having to transition to virtual learning, and experiencing rotations that were modified, moved, or suspended. The COVID-19 outbreak has also led to an increase in prevalence of depression and anxiety among postgraduate trainees (Irman et al., 2020).

Recommendations in the literature include implementing special interventions to promote mental health and well-being in HCWs working during public health emergencies such as the pandemic. Information needs to be provided in a timely and correct way to such providers. It has also been recommended that there be special efforts to promote the psychological well-being of postgraduate trainees by providing expanded psychological support systems that acknowledge the additional stress related to COVID-19 in relation to their already challenging residency training. Leaders should also facilitate close communication and regular evaluation of trainees' needs.

Following multiple rounds of deductive and inductive coding, thematic analysis of resident interviews revealed a variety of insights relating to:

- Trainee experience of the COVID-19 pandemic, including:
    - Changes in the nature, volume, and scope of work,
    - Changes in work-life balance,
    - Limited learning experiences, and
    - Lack of group cohesion.
- Adjustment and adaptation to changes.
- Positive impacts on trainees' future learning and career, including:
    - Emotional intelligence,
    - Improved culture of trainee health and safety,
    - More experience, exposure, and skill, and

    - Importance of virtual technology.
- Negative impacts on trainees' future experiences.
- Recommended supports.

The shift from in-person to virtual education and training and the public health measures implemented in response to the pandemic caused a lack of group cohesion and few opportunities to engage in team building activities. Residents also missed out on vital learning opportunities, including live or direct teaching and learning, training rotations and opportunities to learn from other residents and staff. Residents were aware of the need to acquire specific competencies in order to advance in their training and subsequent career, and were thus concerned about how such limited learning opportunities and exposure would impact their ability to reach typical milestones and benchmarks in the future.

Residents sought support from their family physician, used contracted leave or sick days, debriefed with staff, and engaged in a variety of self-care and self-learning activities to support their mental health and well-being during this time. Despite this, residents described feeling isolated from and unable to access usual supports, such as family and friends who were often not located within their region or province of study.

The rapid and unprecedented changes to their education and training programs also led to several positive changes in resident educational and personal development. An increase in self-directed learning skills was noted, with residents reporting a greater sense of ownership and leadership in their own education. Virtual learning also reportedly improved their learning, increased engagement and attendance, and enabled regular meetings and academic half days when usual in-person learning was not available. Residents reported increased confidence and experience with virtual care, as they realized the importance of virtual care delivery within the Newfoundland and Labrador (NL) healthcare system. A shift in the culture surrounding resident health and safety was also reported, as residents noted that there was a move away from traditional work-life culture to more acceptance of others taking time off and the importance of personal health and safety. Additionally, residents reported increased emotional intelligence (self-awareness, empathy, compassion) which may enhance learning and delivery of patient-centered care.

Resident interview findings suggest that additional supports may need to be provided to those without access to appropriate and preferred sources of support during a healthcare crisis, such as the COVID-19 pandemic. Results highlight the importance of exploring and maintaining awareness of the background of trainees and focusing on team building to improve comradery within and between disciplines and professions as public health measures are lifted and work

and social routines return to normal. Additional suggestions include administrative recommendations for program and systemic change, such as providing protected time for social events, implementing mandatory wellness check-ins, allowing more flexibility and access to leave options and time off, considering remuneration for additional duties, such as vaccine administration, improving clarity regarding the essential role of residents during the pandemic, and increasing the number of residents.

1.0 Introduction

Phenomenology is a qualitative research approach, which emphasizes participants' perceptions, feelings, and experiences as the paramount object of a study with the goal to search for the 'essential structures' of phenomenon by interviewing, in depth, a number of individuals who have experienced the phenomenon (Fraenkal et al., 2012). This study adopted a phenomenological approach to explore the lived experiences of postgraduate trainees in coping and managing with psychological, emotional, and social stressors during COVID-19. Phenomenological research seeks to answer the question, 'What is the essence of experience of this phenomenon for those who experience it?' (Patton, 1990). This study used a descriptive phenomenological approach, focusing "less on the interpretations of the researcher and more on a description of the experiences of participants" (Creswell & Poth, 2016, p. 253).

COVID-19 has had a considerable impact on society, healthcare systems worldwide and the psychological and social health of healthcare workers (HCWs). Mental health is recognized as a fundamental factor influencing the health and safety of all workers and workplaces in Newfoundland and Labrador (NL). Inattention to mental health in the workplace can have significant effect on absenteeism, productivity, errors and mistakes, and the overall safety of our workplaces and workers. According to Irman et al. (2020), postgraduate trainees are among the most vulnerable HCWs in our healthcare system and represent medical doctors who have graduated from a medical school and are in the vocational aspect of their training. These doctors play an important clinical service role in the Canadian healthcare system.

During the pandemic, postgraduate trainees have contributed significantly to the healthcare workforce required to manage patients with COVID-19. While protecting HCWs became an important component of public health measures, a better understanding of the nature and effect of the pandemic on these trainees is needed to evaluate the impact of this outbreak on trainee well-being as well as the nature of supports and interventions that may have been effective or could be supplemented to help trainees with their psychological well-being. This research is important for our current and future trainees.

In Canada, medical education is a graduated process, composed of two main stages. The first stage involves successful completion of a Medical Doctor (M.D.) program, followed by postgraduate medical education, or 'residency training'. Residency training is the final stage of medical education, prior to College certification and practice as a fully-licensed physician. In Canada, Family Medicine training programs are typically two years in length, with an optional third year for those who choose to pursue advanced training in areas such as emergency

medicine, care of the elderly, or other enhanced skills. Medical, surgical, and laboratory training programs typically span 3-5 years, with sub-specialization extending the length of training for some (CAPER, 2020). Memorial University offers 19 such programs including core and subspecialty/enhanced skills training.

COVID-19 has fundamentally changed society and the delivery of healthcare in Canada, and so postgraduate medical education has also had to transform. Trainees have been redeployed and rotations modified, moved, or suspended. Onboarding and orientation of new trainees has changed and those moving from locations with high prevalence of COVID-19 may have been required to temporarily self-isolate, causing interruptions in training (McCarthy et al., 2020). Postgraduate medical education programs are entrusted with ensuring the safety of their trainees and trainees are, in turn, entrusted with the safety of the patients they encounter and treat.

Imran et al. (2020) recommend that further research is needed to assess the long-term impact of the COVID-19 outbreak on trainee mental health, as well as the effectiveness of any interventions to improve their psychological well-being. However, generally little attention and time are given to mental health issues of HCWs. Published literature has focused mainly on the impact of pandemics on the mental state of HCWs and less on implemented interventions and their effectiveness to overcome these conditions (Zaçe et al., 2021). Qualitative research adds a unique dimension to understanding the experiences of postgraduate trainees' during the current COVID-19 pandemic and the ways in which they have been affected and empowered to cope.

The purpose of this study was to explore the experiences of postgraduate trainees and their perceived mental health and well-being challenges, resiliency and coping supports during the COVID-19 pandemic. The study objectives were to:

- Identify and describe the perceptions, experiences, and challenges of postgraduate trainees in meeting work and training commitments during the COVID-19 pandemic,
- Identify coping mechanisms and supports available to and utilized by postgraduate trainees during the pandemic, and
- Uncover opportunities for enhancing support systems for postgraduate trainees in coping with psychological, emotional, and social stressors and challenges during times of a public health emergency.

2.0 Methodology

The two key methods employed in this study were: (1) literature review, and (2) semi-structured resident interviews.

2.1 Literature Review

A search of the peer-reviewed literature was conducted between May and June 2022 using the PubMed database. Search results were limited to peer-reviewed, English language publications (March 2020-June 2022). The following terms were used in various combinations to further refine the search results:

- 'Physicians' (Mesh), 'medical residents', or 'medical trainees',
- 'Resilience, Psychological' (Mesh), 'Adaptation, Psychological' (Mesh), 'Mental Health' (Mesh), 'resilience', 'coping', 'burnout', or 'support',
- 'COVID-19', 'SARS-CoV-2', 'pandemic', 'infectious disease outbreak', or 'public health emergency', and
- 'Canada' (Mesh and non-Mesh), or 'Canadian'.

The search yielded 105 articles, which were then screened by two members of the research team. Following the review of article titles and abstracts, 72 articles were excluded because they:

- Discussed an intervention or clinical practice guideline where practicing physicians or medical residents/trainees were not the subject,
- Described a study protocol,
- Did not discuss mental health and psychological issues related to the COVID-19 pandemic, or
- Did not relate to the Canadian healthcare context.

The remaining 33 articles were included, along with several articles which were referenced in the initial research proposal. Article abstracts for the 33 articles resulting from this expanded search are included in Appendix A.

2.2 Resident Interviews

Semi-structured interviews were conducted with a stratified purposeful sample of postgraduate trainees across a range of postgraduate years of training (PGY) and working across different

programs and health regions in NL. The research team constructed an original interview script (Appendix B) for the study. The interview questions were open-ended and focused on postgraduate trainees' well-being and their perceived psychosocial challenges, resiliency and coping supports during the COVID-19 pandemic. Respondents had the opportunity to review the questions prior to the interview. The interviews were conducted via videoconferencing and were recorded with the consent of the resident.

The recruitment of study participants and the interviews took place between May and October 2022. The research team sought help from a variety of groups to promote the study by distributing a letter of invite and promotional poster on behalf of the research team. These groups included:

- Professional Association of Residents of Newfoundland and Labrador (PARNL),
- Postgraduate Medical Education (PGME) Office, Faculty of Medicine, Memorial University, and
- Office of Learner Well-Being and Success (LWS), Faculty of Medicine, Memorial University.

The letter of invite to participate in an interview and the promotional poster were distributed via email to residents. Twelve (N=12) residents expressed an interest in the study. Eight (n=8) residents agreed to participate. These recruitment strategies were initiated in May and were repeated two additional times between June and August.

An additional recruitment strategy was carried out with the aid of the program disciplines, who provided time at the beginning of their academic half days for members of the research team to present the study in person to the residents. The Academic Program Administrators (APAs) also distributed the project invitation letter and poster to residents in their program. The request for time during program academic half days was supported by the PGME office. Emails requesting time for the research team were sent out from the PGME office to the APAs for each program discipline initially in June and were repeated three additional times between July and September. Thirteen (n=13) recruitment presentations were made between June and October.

The Faculty of Medicine Communications Office promoted the study on their various social media channels, and the Health Sciences Information & Media Services-Graphics Support unit displayed the study information on video monitors throughout the Faculty of Medicine and Health Sciences Centre buildings between June and October.

The interviews were recorded, transcribed, and imported into NVivo 20 analytical software. The data was analyzed using a thematic analysis technique based on descriptive phenomenology. The goal of this thematic analysis was to "achieve an understanding of patterns of meanings from data on lived experiences" (Sundler et al., 2019, p. 736).

In the process of data analysis, the researchers questioned the understanding of data and themes derived and ensured that the derived themes were grounded in the research data rather than in their own understanding. To enhance the trustworthiness of our study, multiple coders were involved in open inductive coding. First, two common transcripts were independently reviewed by three research team members, who then met to discuss patterns of meanings from the data and generated an initial coding schema. Then, a second-level coding was done using this initial coding schema by two other researchers who independently coded the same two transcripts for verification of the codes. Through this second round of coding, the team refined, expanded, and elaborated to produce a focused coding schema. Application of this coding schema was then applied to the remaining six transcripts through multiple rounds of coding that varied between deductive (applying the schema developed through inductive coding) to inductive (expanding, refining and elaborating schema). Two members of the team collaboratively collated the coded transcripts, refined the coding schema and identified common themes.

3.0 Findings

3.1 Literature Review

Beginning in early 2020, a novel pneumonia caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), resulting in coronavirus disease (COVID-19), began to spread across the globe. Since then, COVID-19 has been declared a global pandemic and has continued to have a considerable impact on population health and healthcare systems worldwide. Not only has it resulted in more than half a billion cases and over six million deaths, it has overburdened healthcare systems and markedly threatened the physical, psychological, and social health of HCWs (Behrman et al., 2020; Imran et al., 2020; World Health Organization, 2022).

HCWs are increasingly vulnerable to emotional distress, with those working on the front lines and directly involved in the diagnosis, treatment, and care of patients at increased risk of developing psychological distress and other mental health symptoms. In usual times, postgraduate trainees are among the most vulnerable, with a high prevalence of burnout and psychological morbidity (Imran et al., 2020; Lou et al., 2022; Smida et al., 2021). Increased and clinically significant psychological symptoms of anxiety, stress, depression, post-traumatic stress disorder, and burnout amongst physicians have been reported during and following infectious disease outbreaks, including COVID-19 (Dimitriu et al., 2020; Feist et al., 2021; Mendonça, Steil & Góis, 2021; Mendonça, Steil, Teixeira & Góis, 2021; Nguyen et al., 2022; Steil et al., 2022; Wang et al., 2020). Physicians and trainees who are younger, more junior, women, parents of dependent children, and who lack practical support are at increased risk of psychological distress (Dimitriu et al., 2020; Kisely et al., 2020; Mercuri et al., 2022; Smida et al., 2021; Smith et al., 2022; Ting et al., 2022). Recent studies highlight an increased risk and prevalence of such issues due to the COVID-19 pandemic (Imran et al., 2020; Smida et al., 2021; Steil et al., 2022; Wang et al., 2020).

Psychological distress has been associated with medical errors, lapses in professionalism, and a high risk of serious psychiatric problems, including suicidal ideation (Imran et al., 2020; Smida et al., 2021). Sources of distress may include feelings of vulnerability, grief, or loss of control and concerns about health of self, spread of virus, health of family and others, changes in work, uncertainties about the future, and being isolated. The characteristics of COVID-19 itself, namely that it is human-to-human transmissible, highly contagious, associated with high morbidity and potentially fatal, also serve to intensify a perception of personal danger (Lai et al., 2020). The increasing number of confirmed and suspected cases, overwhelming workload,

patient mortality rate, depletion of personal protective equipment (PPE), lack of specific drugs, frustration, isolation, and fears of getting or transmitting the virus may have all contributed to the mental burden of HCWs during the COVID-19 pandemic (Behrman et al., 2020; Coenen et al., 2022; Dimitriu et al., 2020; Fiest et al., 2021; Imran et al., 2020; Kaplan et al., 2021; Lai et al., 2020; Lou et al., 2022; Romanelli et al., 2020; Smida et al., 2021; Zaçe et al., 2021). Physicians may also be contending with grief over the loss of personal/professional relationships and plans for the future due to the change in scope of practice or clinical focus that accompanies redeployment (Luong et al., 2022).

Such challenges are especially burdensome for trainees, who have been expected to adapt and contribute while their work and learning environments have been affected by fluctuating measures and policies (Wohlfarth et al., 2021). Several authors note that trainees have had to deal with disruptions in their training and career due to redeployment, transitions to virtual learning, and modification or cancellation of rotations/placements (Bhalla et al., 2021; Blake et al., 2021). In addition, safety issues, risk of infection, transmission of the virus, increased workload, physical exhaustion, sleep deprivation, restricted social interaction, changes in onboarding and orientation, and self-isolation requirements have also been consequences of the pandemic (Dimitriu et al., 2020; Imran et al., 2020; McCarthy et al., 2020; Wohlfarth et al., 2021).

Higher levels of both acute or post-traumatic stress and psychological distress have been found among HCWs who are or have been in contact with COVID-19 infected patients (Kisely et al., 2020; Smith et al., 2022; Ting et al., 2022; Wang et al., 2020). In their study of physician burnout among Vancouver, British Columbia internal medicine physicians, Khan et al. (2021) found that 68% reported high levels of burnout, as indicated by emotional exhaustion and/or depersonalization. A high prevalence of burnout is also noted in several recent articles amongst emergency medicine physicians and trainees (Dagnone et al., 2022; Lim et al., 2020; Mercuri et al., 2022; Ting et al., 2022; Weygandt et al., 2021). The highest rates were noted by Lim et al. (2020), who found that nearly 85% of Canadian emergency medicine physicians suffered from burnout prior to the COVID-19 pandemic. However, in their Canada-wide survey study of emergency medicine physicians during the first wave of the pandemic (i.e., the first 10 weeks), deWit et al. (2020) found high levels of burnout in less than 20% of respondents. A similar Canada-wide survey of emergency medicine physicians during the second wave of the pandemic indicates that these numbers increased as the pandemic progressed, with 60% of respondents reporting burnout (high emotional exhaustion and/or high depersonalization) (Mercuri et al., 2022). Additionally, a recent report from the Canadian Association of Emergency Physicians (2021) found that many emergency medicine physicians suffer from PTSD and are considering leaving their profession.

Several recent studies also highlight the challenges faced by women physicians or trainees (Khan et al., 2021; Smith et al., 2022; Ting et al., 2022). Khan et al. (2021) found that women were more likely than men to report emotional exhaustion and feelings of low personal accomplishment. Smith et al. (2022) and Ting et al. (2022) note that gender norms and roles pose additional challenges for women physicians and trainees. As they explored the 'Six Areas of Worklife' model, Ting et al. (2022) noted that unsustainable workloads, perceived lack of control, insufficient rewards for effort, lack of a supportive community, lack of fairness, and mismatched values and skills significantly contribute to physician burnout. This was especially true amongst young women physicians who more often contended with home responsibilities, planned to start a family, had young children, experienced microaggressions, and were asked to complete tasks outside their scope of practice (Ting et al., 2022). A recent qualitative study revealed that women physicians in British Columbia were challenged by unpaid care responsibilities, often felt excluded by leadership, and felt dismissed by leadership occasionally (Smith et al., 2022).

Poor mental health, the psychological manifestation of which often includes anxiety, depression, pessimism, irritability, a sense of overwhelm, discouragement, lack of interest or an inability to concentrate and make decisions, has been identified as a leading cause of disability for health workplaces (OHS Canada, 2021). Numerous professional organizations have highlighted that HCWs represent a high-risk group for experiencing mental health issues (Canadian Medical Association, 2021; De Hert, 2020; HealthcareCAN, 2021; Zaçe et al., 2021). Thus, the well-being and psychological safety of physicians and medical trainees is vital, especially during a public health crisis. It has been recommended that special interventions to promote mental health and well-being in HCWs exposed to COVID-19 be introduced immediately (Fiest et al., 2021; Lai et al., 2020; Zaçe et al., 2021). A variety of strategies, frameworks, interventions, and recommendations focused on the promotion and protection of their psychological well-being are discussed in the literature.

According to Zaçe et al. (2021) interventions which address HCWs mental health issues during a pandemic can be grouped into four categories: 1) informational support (training, guidelines, prevention programs); 2) instrumental support (PPE, protection protocols); 3) organizational support (manpower allocation, working hours, re-organization of facilities/structures, provision of rest areas); and 4) emotional and psychological support (psychoeducation and training, mental health support team, peer-support and counselling, therapy, digital platforms and tele-support). Most recent articles tend to focus on the provision of informational support and emotional and psychological support to individual HCWs. As examples, these supports could encompass the promotion of psychological first aid programs, digital self-care packages, peer support, telehealth counselling, and other such strategies which promote healthy coping

strategies, resilience, personal agency, wellness, and self-care (Behrman et al., 2020; Blake et al., 2021; Dagnone et al., 2021; Ey et al., 2020; Huffman et al., 2021; Imran et al., 2020; Lou et al., 2022; Myran et al., 2022; Romanelli et al., 2020; Smida et al., 2021; Smith et al., 2022; Vasquez Morgan, 2021).

Vercio et al. (2021) suggest that current frameworks to promote wellness and reduce burnout do not offer adequate strategies to address the concomitant personal, organizational, or societal crises at hand. Additionally, they note that "emphasizing personal resiliency without addressing organizational resiliency may leave physicians feeling alienated or marginalized from critical support and resources that organizations can and should provide" (p. 568). In fact, they add, "the best way to build resilient healthcare providers is to build a resilient organization and community to surround them" (p. 571). This requires organizations to address the dimensions of culture, social networks, learning, leadership, resources, adaptive capacity, systems, and capital (Vercio et al., 2021). Successful organizational leadership recognizes individual mental health problems, effectively uses available resources, influences the organizational culture, and increases the adaptive capacity to respond to stressors (Vercio et al., 2021).

Workplaces can play an important role in maintaining positive mental health, and a psychologically healthy and safe workplace promotes workers' psychological well-being and can actively strive to prevent harm to worker psychological health (Canadian Centre for Occupational Health and Safety, 2021; Mental Health Commission of Canada, 2021; WorkplaceNL, 2021). There are several workplace psychosocial factors known to positively impact workplace mental health including psychological support, protection, and demands. If these factors are optimally managed in the workplace, they have the potential to prevent psychological harm (Canadian Centre for Occupational Health and Safety, 2021).

Authors have recommended that special efforts to promote the psychological well-being of postgraduate trainees should be enhanced with psychosocial support systems expanded in scope to acknowledge the additional stress related to COVID-19 in the context of already challenging training (McCarthy et al., 2020; Imran et al., 2020). Smith et al. (2022) note that physicians and trainees are often encouraged to establish their own individual responses to what are actually social structural challenges. Grant et al. (2021) suggest that emergency departments should consider recruiting additional allied healthcare and administrative staff (medical assistants, scribes, coordinators, and clerical assistants) to unburden emergency physicians from nonclinical tasks, in addition to offering mental health supports, with digital and in-person options, and scheduling flexibility. Further Zaçe et al. (2021) suggest that providing information in a timely and correct way, sufficient equipment, adjustments in

working hours, workforce allocation, and reorganization of healthcare facilities are imperative to ensuring safer and healthier environments for HCWs.

Since physician mental health may worsen as the pandemic draws on, there may be a growing need for institutional support, improved access to mental health services, and system level change (Myran et al., 2022; Natsuhara & Borno, 2021). Smith et al. (2022) suggest that improvements ought to be made in recognizing women's contributions at home and work, representing women in decision-making, and providing women with practical supports, such as childcare and counselling. According to Wohlfarth et al. (2021), trainees need to be deployed appropriately and provided with sound legal guidance, adequate safety measures, sufficient clinical knowledge, appropriate supervision, satisfactory social integration, and accessible mental health support. They further suggest that leaders should facilitate close communication and regular evaluations of trainees' needs.

3.2 Resident Interviews

Semi-structured interviews were conducted by videoconferencing with residents (n=8) representing a variety of programs and postgraduate training years.

Resident demographic characteristics are summarized in Table 1.

Table 1. Resident Demographic Characteristics

Demographics Characteristics	n	% of Total Respondents
Gender:		
Male	4	50.0
Female	4	50.0
Postgraduate Year:		
PGY 1	2	25.0
PGY 2	1	12.5
PGY 3	3	37.5
PGY 4	1	12.5
PGY 5	1	12.5
Program:		
Diagnostic Radiology	1	12.5
Family Medicine	1	12.5
General Surgery	1	12.5
Neurology	1	12.5
Pediatrics	1	12.5
Psychiatry	3	37.5

Regional Health Authority:		
Eastern	7	87.5
Western	1	12.5

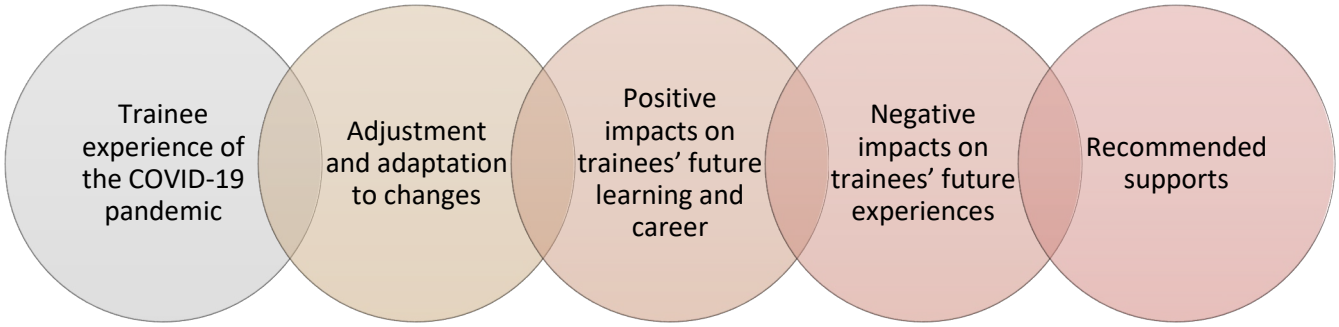
Residents were asked to:

- Reflect on how their experiences as a trainee have been affected as a result of the COVID-19 pandemic,
- Discuss if they learned anything new or different on a professional and/or personal level as a result of training and working during a public health emergency that has helped them develop as a healthcare provider,
- Reflect on how they felt their experiences as a trainee during COVID-19 will affect them as a healthcare provider in the future,
- Describe their experiences in adjusting and adapting to the changes in their training and work responsibilities during the pandemic, and
- Comment on their sources of strength or support during COVID-19.

Following multiple rounds of deductive and inductive coding, thematic analysis of resident interviews revealed a variety of insights relating to:

- Trainee experience of the COVID-19 pandemic, including: (a) changes in the nature, volume, and scope of work; (b) changes in work-life balance; (c) limited learning experiences; and (d) lack of group cohesion,
- Adjustment and adaptation to changes,
- Positive impacts on trainees' future learning and career, including: (a) emotional intelligence; (b) improved culture of trainee health and safety; (c) more experience, exposure, and skill; and (d) importance of virtual technology,
- Negative impacts on trainees' future experiences, and
- Recommended supports.

Figure 1. Key Interview Themes



3.2.1 Trainee Experience of the COVID-19 Pandemic

Residency is described as difficult in the best of times. For example, one resident noted that:

> *First year residency does not really set people up to be well. To have people do seven 24-hour call shifts a month on top of their usual work … Residents are already put in an environment that is super stressful at baseline - being in and working an extraordinary amount of hours, that it would be nearly impossible to be completely well.* [Resident #2]

Although the experience of the COVID-19 pandemic has been described as less severe in NL when compared to other Canadian and international jurisdictions, this 'normal' hardship of residency was intensified by public health measures implemented to stem the spread of COVID-19, and the rapid changes made to resident education and training which followed.

Residents described the impact of public health measures, such as travel restrictions, isolation requirements, and mask mandates, as follows:

> *I think coming from away, it was very difficult. We were isolated here from June 2020 until; I did not really leave the island until April of 2022 this year. I felt like I was isolated physically from my friends and family. So I think if you were a resident coming from the mainland to Newfoundland in 2020, then I think it was very difficult.* [Resident #7]

> *This past year in 2021, that was when we were having another large COVID outbreak and we had to isolate for 5 days before going into a hospital. Residents had to modify their vacation plans to be able to isolate to be able to go to work services.* [Resident #5]

Residents also described rapid changes to their education and training which followed, as their usual in-person academic and clinical learning was suspended, and efforts were made to pivot to virtual delivery.

> *Initially, when everything first shut down in the first week, clearly, all of our academic stuff came to a halt*. [Resident #3]

> *When I started, obviously all of our academic half days were in person. So, with the COVID [shutdown], obviously all switched over to the virtual format*. [Resident #4]

> *[When] the WHO declared it a pandemic, the response from my discipline was to take learners out of hospital and put them on a virtual rotation. There was no established curriculum. There was no real structure for any of this.* [Resident #6]

Figure 2. Trainee Experiences

Changes in the Nature, Volume, and Scope of Work

Significant changes in the nature, volume, and scope of resident work were also reported. Not only was there a significant shift to virtual care, but disciplines also shifted to emergency coverage, patients were presenting sicker, and patient volumes were higher.

> *A lot of virtual care which comes with a load of challenges … the patient population, the types of problems you are dealing with, access to virtual care.* [Resident #2]

> *Our discipline turned into an emergency basis only … we ended up seeing cases that are a lot more complex and stuff, because people were presenting later with more serious issues … we ended up seeing even advanced cancers that we haven't even really seen in years.* [Resident #6]

> *The types of patients that you are treating were just the sickest of the sick because people were avoiding coming to the hospital and waiting until it was too late. So all you were seeing, all you were doing was "scut work", working really hard, and dealing with really sick and dying patients. And there wasn't really any of the "fun" … or any of the success stories that you are normally used to seeing … whenever we would have a healthcare shut down … within a*

> *month you would get this huge influx. You just get slammed with all these super, super sick patients.* [Resident #3]

> *Because of the backup in the healthcare system, the lack of primary care, we are all feeling that. My work and my on-call duties have increased exponentially … The volume of patients that we see, especially on call, it has increased threefold … clinics, they are much harder to schedule, the volume is higher, but they are much harder to schedule and then you have issues with the technology and everything and then you are so busy. You have all these conflicting things coming at you, not that they were not there before, but that they seemed worse now.* [Resident #2]

Changes in Work-Life Balance

Residents also reported changes in their experience of balance between work and life, study and work. Some of these changes were positive, such as being able to multi-task, advance career goals, pursue non-academic interests, and have more time for family.

> *Most of us felt as though we had never really had any time to explore interests or do anything that was not academic … I actually picked up a bunch of new practices and wellness things throughout that break and many of my friends did as well.* [Resident #2]

> *Virtual meetings have freed up some time, which is nice. You do not have as much travel time and all of that … If I had a meeting at home, I could have a little more time to myself to throw laundry in, or something.* [Resident #2]

> *The extracurricular stuff … like a master's program. That is something I did a couple of years ago during the first wave when I just had all this free time, because I was not at work as much … I never would have signed up for that had I not had that period of time to just, take some time and think about my career goals.* [Resident #3]

However, with these positives also came the negative. One resident captured the double-edged nature of these consequences when they described feeling the need to always be available or unable to 'leave work'.

> *All switched over to the virtual format. On one hand, that was a good thing in the sense that it allows you to multi-task. I could clean the floor while I am listening to the lecture … [but] everyone is burnt out by it. Even though it is easier to have virtual meetings and academic half days, we just had too many meetings … There is more emphasis on you to always be available and so when you go home, you want to be able to turn off, but that is the time when most*

> *people can make meetings. Then you have evening meetings and weekend meeting. It is a big ask.* [Resident #4]

Another detailed the prevalence of residents encountering challenges with childcare.

> *A lot of our residents have multiple children. Trying to be home, then all of a sudden the childcare, and just trying to keep up on that. It almost felt like we were not in residency for about 2 months.* [Resident #6]

Limited Learning Experiences

Residents recounted their experience of missing out on vital learning opportunities during the pandemic, including live or direct teaching and learning, training rotations, and opportunities to learn from other residents and staff.

> *A lot of our learning, at least in my specialty, really comes from sitting next to someone and reviewing scans in live time … We did not really get that … usually, when they review a case, they will say, oh, this is common exam knowledge or this is something that comes up on the exam all the time … We could not even do our regular rotations … everything was shut down and just emergency only. That went on for a very long time … so we really lost our normal curriculum … We did not watch seniors. We did not have any senior residents. We were really our own island … it takes a village … even the technologist teaches a lot and other residents from other disciplines when we are on call and we are talking to them. But all of a sudden going to this no contact or limited contact … unfortunately, sometimes learning goes to the back when it comes to a public health emergency.* [Resident #6]

A lack of networking and informal learning from colleagues was also noted, both of which are highly valued for personal and professional development.

> *I was not able to go to any conferences in the first year. That was an entire year of not networking. People were able to do virtual electives and things like that, but in terms of actually being able to travel the opportunities were fairly slim and same with being able to do elective rotations.* [Resident #5]

> *No networking. You're basically unable to communicate effectively with your colleagues on a day-to-day basis, socially. I mean, everyone could basically still talk about the task at hand, but there's all this subtle [stuff] that you have in between patient interactions and outside of work that add to your development as a physician. And really add to, I don't know, your growth as a person or whatever.* [Resident #1]

One resident shared their concern about this and how it may impact them in the future.

> *I felt like we missed a lot of clinical training, and I do not have any way of knowing either way, but I still wonder to this day, is that going to affect me in the future?* [Resident #2]

Particularly within the context of post graduate medical education, which takes a competency-based approach, residents were keenly aware of the need to acquire specific competencies in order to advance in their training and subsequent career. Such limited learning opportunities and clinical exposure may negatively impact their ability to reach typical milestones and benchmarks within their training. One resident had this unfortunate experience.

> *…all of a sudden, we were not hitting benchmarks …I went and spoke to the program director and was told this is a phenomenon [within my discipline]. For your particular year, all across Canada, you are all on average 6 months behind where other cohorts were.* [Resident #6]

Lack of Group Cohesion

Due to the shift from in-person to virtual education and training and the public health measures implemented in response to the pandemic, residents reported a lack of group cohesion and few opportunities to engage in team building activities.

> *I do not think I have had that same, you know, camaraderie, workplace environment that people would normally have had when there's no masks, no mandates, no restrictions … [There has been] no real team building and being able to bond with your colleagues. I mean, there is that, but not as much as it would have been.* [Resident #1]

> *Since we were new residents, we felt very disconnected from our resident group … How you would have gotten that support from your group would be through your [in-person] academic events schedule. Throughout the week you would meet up and you would get to have a chat after they are finished, or for social events, and we have neither … we didn't even have that informal 30 minutes together a week to chat, talk about an upcoming exam, or talk about how things are.* [Resident #2]

> *[Virtual learning] takes away the camaraderie and collegiality of being with your fellow postgraduate trainees … [not] as invested in the educational material as you would be if you were there in person.* [Resident #4]

> *One of the main things [that] affected our group, is group cohesiveness … before we'd all work in the reading room together and stuff. When we went to*

> *these solo, just only coming in to do call, and trying to social distance from each other … you end up really almost losing sight of the other people who are working alongside you. This is a real negative thing.* [Resident #6]

3.2.2 Trainee Adjustment and Adaptation to Changes

Residents conveyed a noteworthy reliance on support from family, friends, and peers during the COVID-19 pandemic. Due to public health measures and restrictions, these connections were often enabled by virtual and digital technologies, such as Facebook or text messages, and FaceTime, video or telephone calls. For example:

> *We started doing these video calls a lot, which we've never done before, and finding different ways to watch movies together through online.* [Resident #6]

Residents also reported seeking support from their family physician, availing of leave or sick days, debriefing with staff, and engaging in a variety of activities as a means to support their mental health and well-being, including: spending time outdoors getting some fresh air, walking, hiking or connecting with nature; exercising regularly; saying no more often; taking courses related to physician leadership and self-reflection; and engaging in meditation and mindfulness.

> *I actually reached out to my family doctor [and] had an informal chat during an appointment, but she actually took two hours and just talked to me about everything that I was going through … [This] was a huge support for me during all of that. Even beyond the physical things, she always made an effort to try to keep in touch with the mental health side of stuff too.* [Resident #6]

> *I never took any formal time away. I had no problem … taking a singular day, or tacking on to a long weekend, just for extra time away. Nothing formal, like, oh, I need a leave of absence or things like that, just a day.* [Resident #4]

> *I had a lot more formal debriefs with staff than I ever had before the pandemic. Over a night on call that might have been considered … but nowadays we are a lot more like, let's debrief. How do you feel about ___? And talking about it to bring other scenarios in.* [Resident #3]

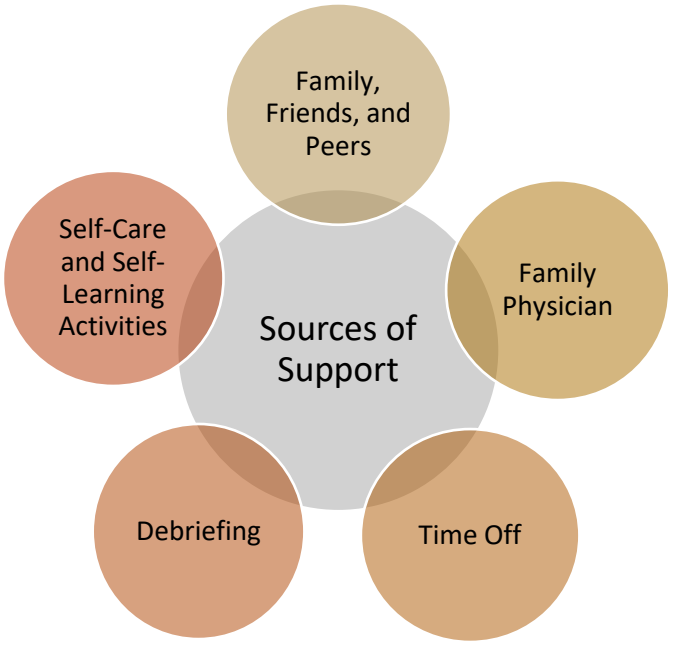
Several residents indicated that their Program Directors or leaders were available for support if they were ever in need.

> *We are lucky. We have a great program director. They are supportive and always say that if you are feeling burned out or under a great amount of stress they are your first point of contact on a professional level.* [Resident #4]

> *The pandemic has been challenging for everybody, but I will say that leaders in the program have appreciated that it has been challenging and they have made it very clear that should anybody need any additional support or resources that would be possible. So, there has been kind of like an overarching message of support which I think is really important.* [Resident #5]

> *Our program directors [in our discipline] are phenomenal. They are so supportive - just knowing that someone's in your corner and even just for the debriefing about different things.* [Resident #6]

Figure 3. Supports Used by Trainees



Despite this, one resident appropriately described how the experience of the COVID-19 pandemic and associated public health measures likely resulted in the stripping away of usual coping mechanisms for many residents.

> *Unfortunately, not only was it a high stress environment at work, but the entire nature of COVID took away a lot of those coping mechanisms for a lot of people. They were not able to go out with friends. They were not able to go to a sporting event. They were not able to have family travel here. I think that many residents, their coping mechanisms were taken away from them in many ways.* [Resident #5]

This is certainly evident in resident descriptions of isolation and restricted access to usual supports, such as family and friends, especially in the context of COVID-19 public health restrictions.

> *A lot of us are like myself. I have moved here. I do not have a partner. I do not have any children or anything. I do not have any family here. So, your friends are in a friend group and when you were in the shutdown, you couldn't hang out, you didn't have the bubble.* [Resident #3]

> *It was very challenging to go out and meet people or do extracurricular [activities] just because of the restrictions, or those things were not actually going on. In terms of being able to make connections, like outside of the hospital, it was challenging.* [Resident #5]

> *I think social isolation really affected many people. I know a close friend of mine from medical school who … had nobody … no partner … no family … some of our residents … are just going on 2 years without being able to go home and having no family connection. You are on a remote island. That is hard.* [Resident #6]

Resident accounts illustrate the mental health challenges, including stress, burnout and exhaustion, they experienced as a result of such restrictions and rapid educational and workplace changes.

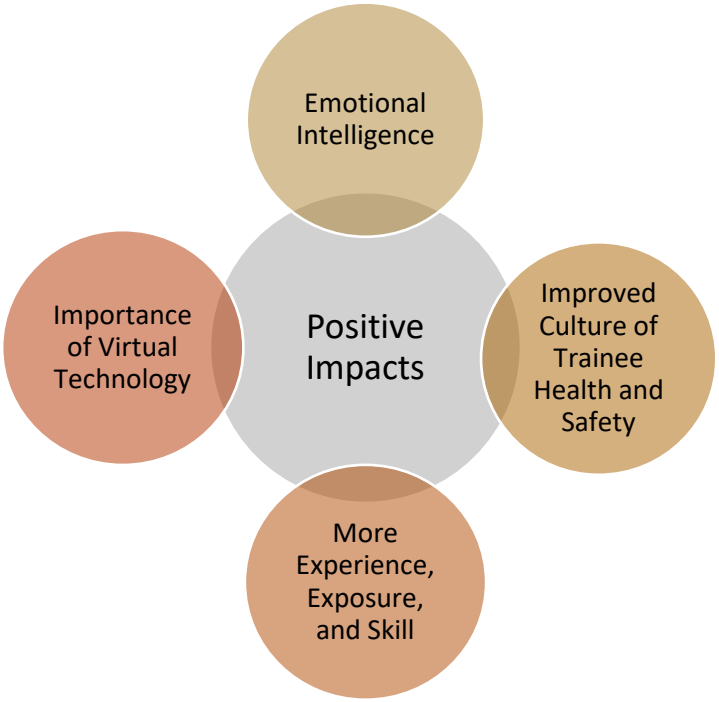
> *I am more tired physically, more tired emotionally, so that kind of trickles down to physical health … everybody is dealing with this intense fear of where is this going? Is my training ever going to resume?* [Resident #2]

> *There's parts of that year I just don't remember … I thought I was coping okay but in retrospect … I think we had the energy then to do it, but [now] we are exhausted … two of my colleagues ended up on antidepressants … you felt like your head was above water and now we're coming out of the pandemic and we are half drowning.* [Resident #6]

3.2.3 Positive Impacts on Trainees' Future Learning and Career

A variety of positive insights and new learnings resulted from residents' experience as a trainee during the COVID-19 pandemic. Residents described an increase in several key traits associated with emotional intelligence, such as self-awareness, self-regulation, empathy and resilience, and improved culture surrounding trainee health and safety. They also noted receiving more experience and exposure to complex cases, sharpening certain clinical skills, and realizing the importance of virtual technology.

Figure 4. Positive Impacts



Emotional Intelligence

Emotional intelligence is "the ability to understand and manage your own emotions, as well as recognize and influence the emotions of those around you" (Landry, 2019, n.p.). Key competencies include: self-awareness, self-management, social awareness, and relationship management (Landry, 2019). An increase in several key traits associated with emotional intelligence, such as self-awareness, self-regulation, empathy and resilience, was by far one of the most significant positive impacts of resident experience as a trainee during the pandemic.

> *I really feel like I got to know myself a lot better. I know my response to stress is better and I know what to do to cope and recharge. That has probably been the biggest upside of the pandemic now.* [Resident #2]

Residents noted that they were more adaptable and resilient.

> *I think we have just adjusted without even noticing we were doing anything … I had a little bit more resilience and I came from of a better place in terms of coping skills. [Resident #2]*
>
> *Now we have had to learn to be a lot more adaptable for sure. Everything is changing and public health measures are changing all the time. [Resident #3]*

> *Anyone who has trained during a pandemic has developed a thick skin … that kind of toughens you up a little bit, I suppose [Resident #4]*

Residents also stated that they had developed a greater sense of empathy and compassion.

> *I have had to care for a lot of people who are COVID-positive and you'd have to fully gown up here. Patients are coming from different backgrounds, you still have to maintain a certain amount of distance with the gown and stuff if they are not going to mask up or if they are not able to mask up. I think learning how to still be compassionate without relying on a lot of the physical touch and cues and proximity. I think that has been a positive.* [Resident #2]

> *I think it was obvious as a provider in the pandemic when we are in this together I felt like I had the same fear as the patients. So I felt like I was on the ground with them and I could understand where they were coming from … It helps me kind of relate to patients on that level and hopefully my future practice I'll be able to apply that. I think it gives me a bit more of an understanding of patient behavior and patients' decisions in ways that I can help patients in the future.* [Resident #3]

> *I think the COVID pandemic has given me a lot of empathy for allied health professionals, and just for the system. When you're going through and you're getting mixed messages … It is frustrating, right. Then you realize at the end of the day, the reason why you are getting all these mixed messages is just people didn't know what they were up against and everybody was just trying their best.* [Resident #6]

Improved Culture of Trainee Health and Safety

A slight culture change was also noted by residents, in that their pandemic experience led to more acceptance of others taking time off and the importance of personal health and safety.

> *… you just do not call in sick unless you are dying. Now with public health measures, if you have a cough you do not come in to work. We have been forced to learn how to deal with people taking sick days and changing our culture around it. Not "guilting" people around it.* [Resident #3]

> *One thing that I have taken back from working during the pandemic is just being aware of looking after myself … I think it has really encouraged us to just take a step back and say, could this be COVID? Or could this be X, Y, and Z? What do I have to wear in order to protect myself?* [Resident #5]

More Experience, Exposure, and Skill

Residents described improved observation and non-verbal communication skills, more experience, and increased exposure to complex cases. For example:

> *Using masks and using virtual care, we've probably all become a lot better at using nonverbal communication and reading nonverbal communication. I think that's probably a strength and a positive*. [Resident #2]

> *The clinical stuff. In some ways, I feel stronger clinically because of it. Because during the pandemic people were afraid of coming back to hospital. We were seeing the most complex cases on call and the highest volumes we ever saw. So, I feel like in terms of being able to manage the clinical day-to-day cases, the bread and butter, and even the more complex stuff, we got great exposure to that*. [Resident #6]

One resident even described how the rapid changes to their education and training sparked a sense of ownership and leadership in their education:

> *I would say the pandemic has really forced us to take a lot more ownership into our own education. For example, when academic sessions shut down, it was one of our residents that kind of got things going, bought our own zoom accounts, said let's go, we're going to do this, things became like that too. So residents claimed a lot of the roles that we didn't have in the past. We have had to take a lot more agency and leadership within ourselves, which has been an important thing.* [Resident #3]

Importance of Virtual Technology

Several residents described the positive impact of virtual learning, in that it improved learning, increased engagement and attendance, and enabled regular meeting and academic half days. For example:

> *Our learning recovered completely and actually surpassed from anything it ever was … Since the pandemic hit and we got virtual learning on the go, we have been doing [regular journal clubs] it every single month [and] have actually continued that to this day … [and with] a virtual component now, way more people are tuning in every day. We're getting much more engagement from staff positions and everything because it is just so much easier to tune in for journal club at 8 PM. If you have small kids, you can still tune into journal clubs*. [Resident #3]

Several residents also noted an increased level of comfort and experience with virtual care and the importance of virtual care delivery within NL healthcare.

> *I think there is certainly a role for virtual care, and I do not think I was overly comfortable doing that. I had never done it really … So, I've definitely gained a better comfort with that.* [Resident #2]

> *I know virtual healthcare was sort of on the brink, or maybe being used in some rural places, I guess. Realizing how helpful it can still be. I do not think it is perfect. And I think in person is better, and that's just my personal opinion. Other physicians feel differently, but I do think in times where there is a pandemic, or if we have another one in years to come, or there is somewhere where we cannot get to the hospital, having that accessibility is important for patients. Even for physicians to be paid and not off work, even if they can do virtual clinics, I think for med refills, or anything like that, it still provides some level of care. So seeing how that increased, I do want to use that going forward. [Resident #8]*

3.2.4 Negative Impacts on Trainees' Future Experiences

Similarly, residents shared a variety of insights resulting from their experiences which may have a negative impact on their future education, training, and professional experiences. These include the challenges of dealing with the backlog of work and increased patient volumes that have resulted from the COVID-19 pandemic and changes in trainee or physician interactions with patients.

> *There is a lot of demand [and] I think that we will continue to see an increase in that demand, given the pandemic. So I expect that the next couple of years will be busier for us, yes. I think it will add to our volume. [Resident #7]*

> *The waitlists were always big and now they feel unmanageable. And I don't know if that has an effect on my learning per se, but I think moving forward, even 10 years … you'll still be dealing with that waitlist … I do think my work will be impacted by people who have been on the waitlist for 5, 6 or 7 years, who are very unhappy with the system and are struggling.* [Resident #8]

3.2.5 Recommended Supports

Residents recommended a variety of activities and supports for other residents to avail of to support their own mental health and well-being during pandemic times, including creating and maintaining personal and professional relationships, balanced supports within and beyond residency training and work, and seeking out counselling, mentorship, and debriefing

opportunities. Many of their key recommendations were also directed at administration, leadership, and the system.

> *Instead of putting so much of the pressure on the residents themselves, a lot of administrative things could change for the betterment of residents … I think a lot of it is not so much for residents who know how to be well; they usually just do not have time to do it.* [Resident #5]

These suggestions and recommendations include providing protected time for socials and events, implementing mandatory wellness check-ins, allowing more flexibility and access to leave options and time off, considering remuneration for vaccine administration, adding residents to the list of essential workers, and increasing the number of residents.

> *Unless there's protected time given by the program, or by postgrad or by whoever, we're likely not going to be able to attend … There definitely needs to be protected time for these things. Even if it is not on a Friday night. Even if it was a lunch. We actually had a lunch between all of our residents not long ago. It was under the wellness group. After we had academic half day, we had a wellness lunch. There was no staff. It was just us and it was protected time and everybody really enjoyed it. I left feeling a little more recharged because I had a fun time like, talking about things that bothered us … there is a huge role for that. [Resident #2]*

> *I think the hardest part as a medical trainee is identifying when it is time to reach for help. I do not know how you would implement it really, but some sort of a mandatory check- in. There are resources that are available as rescue resources, but I feel like a lot of the time by the time those are being utilized it is already kind of past the point … we have our Office of Learner Well-Being and Success, but you have to reach out to them … right after this I'm going to my program director meeting that I do once a year [to look] at all my evaluations and everything that's going on … That's twice a year, but we could easily have an equivalent, mental health and wellbeing check in. It could be the same thing. Five minutes … there's maybe five screening questions and then it makes the resident for the first time look at themselves and say, oh, maybe I'm not doing so hot right now. That would be helpful. I do not think it would be difficult to roll out.* [Resident #3]

> *A day off as a day for your mental health and wellness. Having a couple of more flex days in the year would be very helpful … Especially for people who were from away; they could not go home and see family [there] needs to be some loose mechanisms put in place [where] they are not getting any academic penalties, [and can] take some time away, [and] ways to make it up through another means.* [Resident #4]

> *Having residents, considered essential workers. They do not have to come back and isolate for 5 days if working in a hospital and they do not then [cut their] vacation time in half from that few days a year that they get to be around their support system.* [Resident #5]

4.0 Conclusions

The world has been significantly affected by the spread of a novel pneumonia pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), resulting in coronavirus disease (COVID-19). The COVID-19 pandemic has created high levels of concern and stress around the world. For many, our normal way of living has been interrupted with public health restrictions resulting in remote schooling or working from home. Many front-line workers have experienced the reality of having to continue reporting to workplaces in which exposure to COVID-19 is very high. COVID-19 has threatened not only the physical health, but also psychological and social health of HCWs. The psychological response of HCWs to an epidemic of infectious diseases is complicated. Sources of distress may include feelings of vulnerability or loss of control and concerns about health of self, spread of virus, health of family and others, changes in work, and being isolated.

Mental health is an important consideration in workplace safety. The COVID-19 pandemic has increased the stressors placed on our front-line HCWs, particularly for our medical trainees. Unmanaged mental health problems in healthcare workplaces can have serious consequences for the health and safety of HCWs, as well as patients. The combined pressure and stress of training and working during a pandemic have introduced different and unique forms of psychological and emotional stressors for trainees, however as essential workers they have been expected to persevere and maintain high levels of resilience during the pandemic.

Throughout the literature the mobilization of postgraduate trainees to high demand departments and a high likelihood of contacting suspected or confirmed cases with COVID-19 are some of the concerns identified by postgraduate trainees during the COVID-19 pandemic. During the pandemic, trainees have had to deal with disruptions in their training and career. They have been redeployed, transitioned to virtual learning, and rotations have been modified, moved or suspended. Those moving from locations with high prevalence of COVID-19 may have been required to temporarily self-isolate. The COVID-19 outbreak has led to an increase in prevalence of depression and anxiety among postgraduate trainees. Female postgraduate trainees, senior trainees and front-line workers reported experiencing anxiety, depression and acute stress symptoms. Increased workload, sleep deprivation, and being a junior resident were associated with depression in postgraduate trainees.

Due to the shift from in-person to virtual education and training and the public health measures implemented in response to the pandemic, respondents reported a lack of group cohesion and few opportunities to engage in team building activities. Residents missed out on vital learning

opportunities, including live or direct teaching and learning, training rotations, and opportunities to learn from other residents and staff. Residents were aware of the need to acquire specific competencies in order to advance in their training and subsequent career, and were concerned about how such limited learning opportunities and clinical exposure would impact their ability to reach typical milestones and benchmarks. As the impacts of the pandemic emerge over time, this may represent a larger problem within the context of competency-based postgraduate medical education.

Residents also reported seeking support from their family physician, availing of contracted leave or sick days, debriefing with staff, and engaging in a variety of self-care and self-learning activities to support their mental health and well-being during this time. Despite this, residents described feeling isolated from and unable to access usual supports, such as family and friends who were often not located within their region or province of study. This highlights the importance of exploring and maintaining awareness of the background of trainees – particularly of what supports or support network they have and how accessible these are to them.

The rapid and unprecedented changes to their education and training programs also led to several positive changes in resident educational and personal development. An increase in self-directed learning skills was noted, with residents reporting a greater sense of ownership and leadership in their education. Virtual learning also reportedly improved their learning, increased engagement and attendance, and enabled regular meetings and academic half days when usual in-person learning was not available. Residents reported increased confidence and experience with virtual care, as they realized the importance of virtual care delivery within the NL healthcare system. A shift in the culture surrounding resident health and safety was also reported, as residents noted that there was a move away from traditional work-life culture to more acceptance of others taking time off and the importance of personal health and safety. Additionally, residents demonstrated increased emotional intelligence (self-awareness, empathy, compassion) which may enhance learning and delivery of patient-centered care.

Recommendations to protect HCWs mental health have included implementing special interventions to promote mental health and well-being in HCWs exposed to COVID-19 immediately. The World Health Organization recommends psychological first aid for front line workers. Governments and healthcare systems should design and implement intervention strategies in a collaborative and interdisciplinary manner. Information needs to be provided in a timely and correct way. Sufficient equipment, adjustments of working hours, workforce allocation, and reorganization of healthcare facilities are also needed to ensure safer and healthier environments. It has also been recommended that there be special efforts to promote the psychological well-being of postgraduate trainees by providing expanded psychosocial

support systems that acknowledge the additional stress related to COVID-19 in relation to their already challenging residency training. Leaders are also recommended to facilitate close communication and regular evaluations of trainees' needs.

Resident interview findings suggest that additional supports may need to be provided to those without access to appropriate and preferred sources of support during a healthcare crisis, such as the COVID-19 pandemic. Since residents experienced a lack of group cohesion and opportunities to interact and network with staff, peers and colleagues, it will be important to focus on team building to improve comradery within and between disciplines and professions as public health measures are lifted and work and social routines return to normal. Additional suggestions include administrative recommendations for program and systemic change, such as providing protected time for socials and events, implementing mandatory wellness check-ins, allowing more flexibility and access to leave options and time off, considering remuneration for extra workload such as vaccine administration, adding residents to the list of essential workers, and increasing the number of residents.

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Appendix A: Article Abstracts

#	Author(s)	Pub. Date	Title	Keywords	Abstract
1	Behrman, S., Baruch, N., & Stegen, G.	2020	Peer support for junior doctors: a positive outcome of the COVID-19 pandemic?	• COVID-19 • burn-out • junior doctors • mental health • peer-support	The COVID-19 pandemic has imposed new, intense and, as yet, unquantifiable strain on the wellbeing of healthcare professionals. Similarities are seen internationally with regards to the uptake of psychological support offered to healthcare professionals during a pandemic. Junior doctors are in a unique position to offer and access peer support; this is an evidence-based strategy to promote psychological wellbeing of junior doctors through the COVID-19 pandemic and into the future. The development of peer support networks during the pandemic may lead to reduced physician burnout and improved patient care in the future. We discuss a peer support initiative to support medical trainees during the COVID-19 pandemic, discuss the barriers to the success of such schemes, and reflect on the value of grass-roots peer support initiatives.
2	Benson, J., Sexton, R., Dowrick, C., Gibson, C., Lionis, C., Ferreira Veloso Gomes, J., . . . Allen, C.	2022	Staying psychologically safe as a doctor during the COVID-19 pandemic.	• N/A	No abstract available.
3	Bhalla, N., Suneja, N., Kobryn, A., Lew, S., & Dym, H.	2021	The Psychological Well-Being of Medical Versus Dental GME Residents During the COVID 19 Pandemic: A Cross-Sectional Study.	• N/A	**Purpose:** Trainees are facing isolation and burnout, due to the fear of contracting and transmitting novel coronavirus-19 (COVID-19). There has been a reduction in clinical activities of residents. The purpose of this paper is to measure and compare the psychological well-being of dental versus medical residents during the COVID-19 outbreak. **Methods:** This is a cross-sectional study whereby trainees of a hospital in New York City were sent a questionnaire. Participants were from the dental and medical departments. Psychological measures of depression and post traumatic stress disorder were assessed utilizing the Patient Health Questionnaire-9 (PHQ-9) and The Impact of Event Scale-Revised (IES-R) questionnaire. Other variables compared were age, gender, smoking status, living situation and comorbidities.

#	Author(s)	Pub. Date	Title	Keywords	Abstract
					Data analysis utilized chi-squared (X^2) and t-tests. Bivariate correlation and linear regression analyses were also utilized. **Results:** The survey was sent to 19 dental (Dental) and 171 medical (MD) residents. There were 66 participants. The response rate was 63.16 and 35.09% for the Dental and MD residents, respectively. The mean age for the Dental and MD residents, respectively, was 29.62 ± 2.09 and 34.82 ± 9.32 (P = .014). Eighty-one percent of the Dental respondents were male and 33.3% of the MD respondents were male (P < .001). The mean PHQ-9 score was 18.29 ± 2.88 vs 7.24 ± 7.41 for Dental and MD residents, respectively (P < .001). A higher score represents increased severity of depression. The Dental residents scored 61.9 ± 3.90 on the IES-R vs 30.36 ± 24.67 (P < .001). A higher score indicates a greater frequency of intrusive thoughts and avoidance. Forty-two percent of Dental and 13.3% of MD residents tested positive; 25% of Dental and 28.9% of MD residents self-reported symptoms for COVID-19. Being positive or symptomatic resulted in statistically significant higher IES-R and PHQ-9 scores. **Conclusions:** Dental residents and being positive or symptomatic for COVID-19 resulted in higher PHQ-9 and IES-R scores. Being aware of the impact of COVID-19 is an important step in providing intervention.
4	Blake, H., Mahmood, I., Dushi, G., Yildirim, M., & Gay, E.	2021	Psychological Impacts of COVID-19 on Healthcare Trainees and Perceptions towards a Digital Wellbeing Support Package.	• COVID-19 • Digital • Healthcare • Pandemic • psychological wellbeing • students	We explore the impact of COVID-19 on the psychological wellbeing of healthcare trainees, and the perceived value of a digital support package to mitigate the psychological impacts of the pandemic (PoWerS Study). This mixed-methods study includes (i) exposure to a digital support package; (ii) participant survey to assess wellbeing, perceptions of work and intervention fidelity; (iii) semi-structured qualitative interviews. Interviews were digitally recorded and transcribed, data were handled and analysed using principles of thematic framework analysis. Participants are 42 health and medical trainees (9M, 33F) from 13 higher education institutions in the UK, studying during the COVID-19 pandemic. Survey findings showed high satisfaction with healthcare training (92.8%), but low wellbeing (61.9%), moderate to high perceived stressfulness of training (83.3%), and high presenteeism (50%). Qualitative interviews generated 3 over-arching themes, and 11 sub-themes. The pandemic has impacted negatively on emotional wellbeing of trainees, yet mental health is not well promoted in some disciplines, and provision of pastoral support is variable. Disruption to academic studies and

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					placements has reduced perceived preparedness for future clinical practice. Regular check-ins, and wellbeing interventions will be essential to support the next generation health and care workforce, both in higher education and clinical settings. The digital support package was perceived to be accessible, comprehensive, and relevant to healthcare trainees, with high intervention fidelity. It is a useful tool to augment longer-term provision of psychological support for healthcare trainees, during and after the COVID-19 pandemic.
5	Coenen, L., Poel, L. V., Schoenmakers, B., Van Renterghem, A., Gielis, G., Remmen, R., & Michels, N. R.	2022	The impact of COVID-19 on the well-being, education and clinical practice of general practice trainees and trainers: a national cross-sectional study.	• COVID-19 • General Practice • Health care organization • Medical education • Mental health • Telehealth • Workplace learning	**Background:** COVID-19 has changed General Practice (GP) education as well as GP clinical activities. These changes have had an impact on the well-being of medical trainees and the role of GP plays in the society. We have therefore aimed to investigate the impact that COVID-19 has had on GP trainees and trainers in four domains: education, workload, practice organization and the role of GP in society. **Design:** a cross-sectional study design was used. **Methods:** The Interuniversity Centre for the Education of General Practitioners sent an online survey with close-ended and open-ended questions to all GP trainees and trainers in Flanders, active in the period March - September 2020. Descriptive statistics were performed to analyze the quantitative data and thematic analysis for the qualitative data. **Results:** 216 (response 25%) GP trainees and 311 (response 26%) trainers participated. GP trainees (63%, N = 136) and trainers (76%, N = 236) reported new learning opportunities since the COVID-19 pandemic. The introduction of telehealth consulting and changing guidelines required new communication and organizational skills. Most of the GP trainees (75%, n = 162) and trainers (71%, n = 221) experienced more stress at work and an overload of administrative work. The unfamiliarity with a new infectious disease and the fact that COVID-19 care compromised general GP clinical activities, created insecurity among GP trainers and trainees. Moreover, GP trainees felt that general GP activities were insufficiently covered during the COVID-19 pandemic for their training in GP. GP trainers and trainees experienced mutual support, and secondary support came from other direct colleagues. 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. COVID-19 has enhanced the use of

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					digital learning over peer-to-peer learning and lectures. However, GP trainees and trainers preferred blended learning educational activities. **Conclusions:** COVID-19 has created learning opportunities such as telehealth consulting and a flexible organization structure. 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.
6	Dagnone, J. D., Brooks, J., Mann, M., Cameron, B., Gray, S., Poonja, Z., & Lim, R.	2022	Reconceptualizing ER physician wellness in the midst of the pandemic: survival through the lens of personal agency.	• N/A	No abstract available.
7	Dimitriu, M. C. T., Pantea-Stoian, A., Smaranda, A. C., Nica, A. A., Carap, A. C., Constantin, V. D., . . . Socea, B.	2020	Burnout syndrome in Romanian medical residents in time of the COVID-19 pandemic.	• Burnout syndrome • COVID-19 • Residency	Burnout is a state of physical or mental collapse caused by overwork or stress. Burnout during residency training has gained significant attention secondary to concerns regarding job performance and patient care. The new COVID-19 pandemic has raised public health problems around the world and required a reorganization of health services. In this context, burnout syndrome and physical exhaustion have become even more pronounced. Resident doctors, and especially those in certain specialties, seem even more exposed due to the higher workload, prolonged exposure and first contact with patients. This article is a short review of the literature and a presentation of some considerations regarding the activity of the medical residents in a non-Covid emergency hospital in Romania, based on the responses obtained via a questionnaire. Burnout prevalence is not equal in different specialties. We studied its impact and imagine the potential steps that can be taken in order to reduce the increasing rate of burnout syndrome in the pandemics.

#	Author(s)	Pub. Date	Title	Keywords	Abstract
8	Ey, S., Soller, M., & Moffit, M.	2020	Protecting the Well-Being of Medical Residents and Faculty Physicians During the COVID-19 Pandemic: Making the Case for Accessible, Comprehensive Wellness Resources.	• Counseling • physician wellness resources • psychological needs of physicians during COVID19	Accounts of frontline health care workers experiencing distress in the midst of the COVID-19 pandemic highlight the need for accessible psychological support for them. Prior to the pandemic, medical residents and physicians often experienced difficulty receiving counseling due to concerns about confidentiality, stigma, cost, time, and reportability to licensure/credentialing bodies. Since 2004, the OHSU Resident and Faculty Wellness Program (RFWP) team has sought to reduce these barriers by providing on-site free, confidential, individual counseling and medication management. Utilization of this program is high with over 500 physicians a year seeking care; 38% of all OHSU residents/fellows and 7% of all faculty eligible for our services participated in 2019-20. In the present essay, we describe how our model of care for trainees and faculty was a key wellness resource during COVID-19. Similar to other accounts of lower help-seeking by health professionals initially during the pandemic, we experienced a slight downturn in utilization rates during the initial weeks of when the pandemic struck our area, but quickly returned to normal and exceeded prior levels. All appointments shifted to telehealth visits and a number of physicians expressed gratitude for the opportunity to talk through concerns and strengthen coping. A number of physicians requested medication consultations to address severe insomnia, anxiety, and depression. We hope that being present in our physicians' lives when they are exposed to COVID-related stress or trauma will keep them safe, help them cope with difficult experiences and losses, and ultimately facilitate both recovery and post-traumatic growth.
9	Fiest, K. M., Parsons Leigh, J., Krewulak, K. D., Plotnikoff, K. M., Kemp, L. G., Ng-Kamstra, J., & Stelfox, H. T.	2021	Experiences and management of physician psychological symptoms during infectious disease outbreaks: a rapid review.	• COVID-19 • Mental health • Physicians • Review	**Background:** Prior to the COVID-19 pandemic, physicians experienced unprecedented levels of burnout. The uncertainty of the ongoing COVID-19 pandemic along with increased workload and difficult medical triage decisions may lead to a further decline in physician psychological health. **Methods:** We searched Medline, EMBASE, and PsycINFO for primary research from database inception (Medline [1946], EMBASE [1974], PsycINFO [1806]) to November 17, 2020. Titles and abstracts were screened by one of three reviewers and full-text article screening and data abstraction were conducted independently, and in duplicate, by three reviewers. **Results:** From 6223 unique citations, 480 articles were reviewed in full-text, with 193 studies (of 90,499 physicians) included in the final review. Studies reported on

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					physician psychological symptoms and management during seven infectious disease outbreaks (severe acute respiratory syndrome [SARS], three strains of Influenza A virus [H1N1, H5N1, H7N9], Ebola, Middle East respiratory syndrome [MERS], and COVID-19) in 57 countries. Psychological symptoms of anxiety (14.3-92.3%), stress (11.9-93.7%), depression (17-80.5%), post-traumatic stress disorder (13.2-75.2%) and burnout (14.7-76%) were commonly reported among physicians, regardless of infectious disease outbreak or country. Younger, female (vs. male), single (vs. married), early career physicians, and those providing direct care to infected patients were associated with worse psychological symptoms. **Interpretation:** Physicians should be aware that psychological symptoms of anxiety, depression, fear and distress are common, manifest differently and self-management strategies to improve psychological well-being exist. Health systems should implement short and long-term psychological supports for physicians caring for patients with COVID-19.
10	Grant, K., Mehta, S., & Ackery, A.	2021	Post-COVID implications for physician wellness, education, and clinical medicine.	• N/A	No abstract available.
11	Huffman, E. M., Athanasiadis, D. I., Anton, N. E., Haskett, L. A., Doster, D. L., Stefanidis, D., & Lee, N. K.	2021	How resilient is your team? Exploring healthcare providers' well-being during the COVID-19 pandemic.	• N/A	**Background:** The global COVID-19 pandemic has placed tremendous physical and mental strain on the US healthcare system. Studies examining the effects of outbreaks have demonstrated both an increased prevalence and long-term development of Post-Traumatic Stress Disorder (PTSD) symptoms in healthcare providers. We sought to assess the impact of the COVID-19 pandemic on the psychological well-being of medical providers, medical trainees, and administrators at a large academic center to identify stressors and moderators to guide future mental health and hospital-system interventions. **Methods:** A 42-item survey examining specific stressors, grit, and resilience was widely distributed to physicians, residents, fellows, and administrators a large academic institution for departmental distribution. Survey results were analyzed

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					using descriptive statistics, ANOVA, and multivariate linear regressions. A p-value <0.05 was considered statistically significant. **Results:** A total of 785 participants completed the survey. The majority of respondents rated their stress to be significantly increased during the pandemic. Respondents' fear of transmitting the virus to their family members was a significant stressor. Higher resilience was associated with lower stress, anxiety, fatigue, and sleep disturbances. Overall, respondents felt supported by their departments and institution and felt contingency plans and personal protective equipment were adequate. **Conclusions:** Healthcare workers have increased resilience in the face of heightened stress during a pandemic. Higher resilience and grit were protective factors in managing personal and system-level stressors at the peak of the COVID-19 pandemic in our institution. Implementing an intervention designed to enhance healthcare workers' resilience in response to the COVID-19 pandemic is warranted.
12	Kaplan, C. A., Chan, C. C., Feingold, J. H., Kaye-Kauderer, H., Pietrzak, R. H., Peccoralo, L., . . . Akhtar, S.	2021	Psychological Consequences Among Residents and Fellows During the COVID-19 Pandemic in New York City: Implications for Targeted Interventions.	• N/A	**Purpose:** To examine the psychological impact of the COVID-19 pandemic on medical trainees (residents and fellows) working at Mount Sinai Hospital (MSH) in New York City (NYC), the initial epicenter of the United States pandemic. **Method:** The authors administered a survey to 991 trainees in frontline specialties working at MSH in NYC between April and May 2020. The instrument assessed symptoms of major depressive disorder, generalized anxiety disorder, COVID-19-related posttraumatic stress disorder, and burnout. Psychiatric screens were aggregated into 1 composite measure, and meeting criteria on any of the 3 scales was considered a positive screen for psychiatric symptoms. The survey also assessed COVID-19-related exposures, worries, coping strategies, and desired interventions. Multivariable logistic regressions were conducted to identify factors associated with psychiatric symptoms and burnout. **Results:** Of the 560 respondents (56.6% response rate), 29.7% screened positive for psychiatric symptoms and 35.8% screened positive for burnout. History of a mental illness, COVID-19-related duties and personal/career worries, and coping by substance use were associated with increased likelihood of screening positive for psychiatric symptoms. Positive emotion-focused coping and feeling valued by supervisors were associated with decreased likelihood. Internal medicine and

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					surgical specialties, a history of mental illness, increased duty hours, duty-related worries, personal/career worries, coping via self-blame and venting, and coping via substance use were associated with higher odds of burnout. Feeling valued by supervisors was associated with decreased burnout odds. The most common crisis-related needs included access to personal protective equipment, food provisions, and financial support. **Conclusions:** Psychological distress and burnout affected approximately one-third of trainees sampled during the height of the pandemic in NYC. As the pandemic surged beyond NYC, these findings suggest that interventions should include addressing basic needs, promoting leadership affirmation, moderating duty hours, supporting trainees financially, and enhancing mental health support.
13	Khan, N., Palepu, A., Dodek, P., Salmon, A., Leitch, H., Ruzycki, S., . . . Lacaille, D.	2021	Cross-sectional survey on physician burnout during the COVID-19 pandemic in Vancouver, Canada: the role of gender, ethnicity and sexual orientation.	• COVID-19 • general medicine (see internal medicine) • human resource management • mental health • public health	**Objective:** To determine the prevalence of physician burnout during the pandemic and differences by gender, ethnicity or sexual orientation. **Design, setting and participants:** We conducted a cross-sectional survey (August-October in 2020) of internal medicine physicians at two academic hospitals in Vancouver, Canada. **Primary and secondary outcomes:** Physician burnout and its components, emotional exhaustion, depersonalisation and personal accomplishment were measured using the Maslach Burnout Inventory. **Results:** The response rate was 38% (n=302/803 respondents, 49% women,). The prevalence of burnout was 68% (emotional exhaustion 63%, depersonalisation 39%) and feeling low personal accomplishment 22%. In addition, 21% reported that they were considering quitting the profession or had quit a position. Women were more likely to report emotional exhaustion (OR 2.00, 95% CI: 1.07 to 3.73, p=0.03) and feeling low personal accomplishment (OR 2.26, 95% CI: 1.09 to 4.70, p=0.03) than men. Visible ethnic minority physicians were more likely to report feeling lower personal accomplishment than white physicians (OR 1.81, 95% CI: 1.28 to 2.55, p=0.001). There was no difference in emotional exhaustion or depersonalisation by ethnicity or sexual orientation. Physicians who reported that COVID-19 affected their burnout were more likely to report any burnout (OR: 3.74, 95% CI: 1.99 to 7.01, p<0.001) and consideration of quitting or quit (OR: 3.20, 95% CI: 1.34 to 7.66, p=0.009).

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					Conclusion: Burnout affects 2 out of 3 internal medicine physicians during the pandemic. Women, ethnic minority physicians and those who feel that COVID-19 affects burnout were more likely to report components of burnout. Further understanding of factors driving feelings of low personal accomplishment in women and ethnic minority physicians is needed.
14	Lie, J. J., Huynh, C., Scott, T. M., & Karimuddin, A. A.	2021	Optimizing Resident Wellness During a Pandemic: University of British Columbia's General Surgery Program's COVID-19 Experience.	• Interpersonal and Communication Skills • Pandemic • Patient Care • Practice-Based Learning and Improvement • Professionalism; Resident education • Resident wellness • Surgical education • Systems-Based Practice • Well-being • Wellness	**Objective:** The University of British Columbia's General Surgery Program delineates a unique and systematic approach to wellness for surgical residents during a pandemic. **Summary background data:** During the COVID-19 pandemic, health care workers are suffering from increased rates of mental health disturbances. Residents' duty obligations put them at increased physical and mental health risk. It is only by prioritizing their well-being that we can better serve the patients and prepare for a surge. Therefore, it is imperative that measures are put in place to protect them. **Methods:** Resident wellness was optimized by targeting 3 domains: efficiency of practice, culture of wellness and personal resilience. **Results:** Efficiency in delivering information and patient care minimizes additional stress to residents that is caused by the pandemic. By having a reserve team, prioritizing the safety of residents and taking burnout seriously, the culture of wellness and sense of community in our program are emphasized. All of the residents' personal resilience was further optimized by the regular and mandatory measures put in place by the program. **Conclusions:** The new challenges brought on by a pandemic puts increased pressure on residents. Measures must be put in place to protect resident from the increased physical and mental health stress in order to best serve patients during this difficult time.
15	Lou, N. M., Montreuil, T., Feldman, L. S., Fried, G. M., Lavoie-Tremblay, M.,	2022	Nurses' and Physicians' Distress, Burnout, and Coping Strategies During COVID-19: Stress	• N/A	**Introduction:** Health care providers (HCPs) have experienced more stress and burnout during COVID-19 than before. We compared sources and levels of stress, distress, and approaches to coping between nurses and physicians, and examined whether coping strategies helped mitigate the negative impact of stress and intentions to quit.

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	Bhanji, F., . . . Harley, J. M.		and Impact on Perceived Performance and Intentions to Quit.		**Methods:** Using a cross-sectional study design, burnout was measured with the Maslach Burnout Inventory. Psychological distress was measured using the Depression, Anxiety, and Stress Scale. A self-reported survey was used to evaluate stressors, impact on perceived performance, and intentions to quit. The data were analyzed using t-tests and linear regression models. **Results:** Responses of 119 HCPs were analyzed. Findings suggest that (1) compared to physicians, nurses experienced a higher level of distress and burnout, and used more maladaptive coping strategies. (2) Both nurses and physicians experienced more distress and burnout during COVID-19 than before. (3) Adaptive coping strategies moderated the negative impact of stress on work performance (4) Adaptive coping strategies moderated the negative effect of stress on burnout, which in turn reduced intentions to quit. Stress negatively impacted work performance and burnout only for those with low, but not high, levels of adaptive coping strategies. **Discussion:** The current findings of HCPs' challenges, risks, and protective factors provide valuable information (1) on COVID-19's impact on HCPs, (2) to guide the distribution of institutional supportive efforts and recommend adaptive coping strategies, and (3) to inform medical education, such as resilience training, focusing on adaptive coping approaches.
16	Lucas, D., Brient, S., Eveillard, B. M., Gressier, A., Le Grand, T., Pougnet, R., . . . Loddé, B.	2021	Health Impact and Psychosocial Perceptions among French Medical Residents during the SARS-CoV-2 Outbreak: A Cross-Sectional Survey.	• COVID-19 pandemic • mental health • physician • resident	This study compared the impact on mental health and the psychosocial perceptions of medical residents and healthcare workers (HCWs) in a hospital after the first peak of the SARS-CoV2 outbreak in France. A validated version of the SATIN questionnaire with a modified scoring system was used to collect data on health and psychosocial factors. This questionnaire was sent to all workers at the hospital in July 2020 and was self-administered online. Using a multivariate multinomial regression model, the study included demographic variables such as age, gender, years at workplace and the relevant of covariate as HCW status. One thousand, four hundred and six questionnaires were available for analysis including 393 non-HCWs, 891 HCWs and 122 medical residents. Medical resident status is a risk factor for stress (OR 4.77 [2.48-9.18] $p < 0.001$), worse global health (OR 4 [1.7-9.6] $p < 0.001$) and mental health (OR 2.58 [1.3-5.1] $p = 0.02$), negative perception of work demand (OR 8.25 [3.5-19.6] $p < 0.001$), work activity environment (OR 3.18 [1.5-6.7] $p = 0.02$) and organizational context (OR 4.9 [2.38-

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					10.4] *p* <0.001). Action on collective support, protection equipment, organizational context and framework are important.
17	Luong, V., Burm, S., Bogie, B. J. M., Cowley, L., Klasen, J. M., MacLeod, A., & LaDonna, K. A.	2022	A phenomenological exploration of the impact of COVID-19 on the medical education community.	• N/A	**Introduction:** The COVID-19 pandemic has caused unprecedented stress to the medical education community, potentially worsening problems like burnout and work-life imbalance that its members have long been grappling with. However, the collective struggle sparked by the pandemic could generate the critical reflection necessary for transforming professional values and practices for the better. In this hermeneutic phenomenological study, we explore how the community is adapting-and even reconceptualising-their personal and professional roles amidst the COVID-19 crisis. **Method:** Between April and October 2020, we conducted 27 (17F, 10M) semi-structured interviews with medical trainees (8), physicians (8), graduate students (3) and PhD scientists (8) working in medical education in Canada, the United States and Switzerland. Data analysis involved a variety of strategies, including coding for van Manen's four lifeworld existentials, reflexive writing and multiple team meetings. **Results:** Participants experienced grief related to the loss of long-established personal and professional structures and boundaries, relationships and plans for the future. However, experiences of grief were often conflicting. Some participants also experienced moments of relief, perceiving some losses as metaphorical permissions slips to slow down and focus on their well-being. In turn, many reflected on the opportunity they were being offered to re-imagine the nature of their work. **Discussion:** Participants' experiences with grief, relief and opportunity resonate with Ratcliffe's account of grief as a process of relearning the world after a significant loss. The dismantling of prior life structures and possibilities incited in participants critical reflection on the nature of the medical education community's professional practices. Participants demonstrated their desire for more flexibility and autonomy in the workplace and a re-adjustment of the values and expectations inherent to their profession. On both individual and systems levels, the community must ensure that long-standing calls for wellness and work-life integration are realised-and persist-after the pandemic is over.

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18	Mendonça, V. S., Steil, A., & Góis, A. F. T.	2021	Mental health and the COVID-19 pandemic: a study of medical residency training over the years.	• N/A	**Objectives:** This study aims to assess the symptoms of burnout, depression, and anxiety in Brazilian medical residents during the COVID-19 pandemic and to compare residents' beliefs and clinical practices related to COVID-19 patients among all six years of medical residency training in Brazil. **Methods:** A quantitative study was conducted in April 2020 with a convenience sample of medical resident volunteers from an anonymous online survey. This investigation collected sociodemographic information and used the Oldenburg Burnout Inventory (OLBI) to measure burnout, the Patient Health Questionnaire (PHQ-9) to measure depression, and the General Anxiety Disorders (GAD-7) to measure generalized anxiety disorder. This study also developed a COVID-19 Impact Questionnaire (CIQ-19) to assess the residents' beliefs and clinical practices related to COVID-19 patients. **Results:** Our sample comprised 3071 respondents. Depressive symptoms were the most common among second-year residents (70.5%), followed by anxiety symptoms (56.0%) and burnout (55.2%) among fourth-year residents. We also observed burnout symptoms (55.1%) among second-year residents. **Conclusion:** The COVID-19 pandemic increased the risk of mental illnesses in some years of residency. Our study could not conclude the reasons why the incidence varies among levels of physician training. Final year medical residents have avoided seeing COVID-19 patients.
19	Mendonça, V. S., Steil, A., & Teixeira de Gois, A. F.	2021	COVID-19 pandemic in São Paulo: a quantitative study	• N/A	**Background:** 2020 was a challenging year for all healthcare professionals worldwide. In São Paulo, Brazil, the virus SARS-CoV-2 took 47,222 lives up to December 29, 2020. The front line of medical professionals in São Paulo was composed of many residents, who were transferred from their rotations to cover the needs of the pandemic.

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			on clinical practice and mental health among medical residency specialties.		**Objective:** To identify medical residents' mental health and clinical issues, regarding symptoms of burnout, depression and anxiety during the pandemic, and to compare them among specialties. **Design and setting:** Quantitative study using a convenience sample of medical resident volunteers who responded to an anonymous online survey that was available during April 2020. **Methods:** This investigation collected sociodemographic information and used the Oldenburg Burnout Inventory (OLBI) to measure burnout, the Patient Health Questionnaire (PHQ-9) to measure depression and the General Anxiety Disorder (GAD-7) scale to measure anxiety symptoms. This study also developed a COVID-19 Impact Questionnaire (CIQ-19) to assess the residents' beliefs and clinical practices relating to COVID-19 patients. **Results:** The sample comprised 1,392 medical residents in São Paulo, Brazil. Clinical specialty physicians showed the highest rates of anxiety symptoms (52.6%) and burnout (51.2%), among the specialties. **Conclusion:** Clinical specialty residents are at higher risk of anxiety, depression and burnout. The symptoms of anxiety and depression have worsened during the COVID-19 pandemic. There is a general need for mental health support interventions for medical resident physicians, which requires reinforcement during this worldwide crisis.
20	Mercuri, M., Clayton, N., Archambault, P., Wallner, C., Boulos, M. E., Chan, T. M., . . . de Wit, K.	2022	Canadian emergency medicine physician burnout: a survey of Canadian emergency physicians during the second wave of the COVID-19 pandemic.	• COVID-19 pandemic • Physician burnout • Wellness	**Objectives:** A previous survey of Canadian emergency medicine (EM) physicians during the first wave of the COVID-19 pandemic documented less than 20% experienced high levels of burnout. This study examined the experience of a similar group of physicians during the second pandemic wave. We reported the associations between burnout and physician age, gender, having children at home and training route. **Methods:** This study utilized a national survey of Canadian emergency physicians. We collected data on demographics and measured burnout using the Maslach Burnout Inventory (MBI). Multiple logistic regression models identified associations between the emotional exhaustion and depersonalization domains of the MBI and EM physician demographics (age, gender, children living at home, and training route).

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					Results: Between November 25, 2020, and February 4, 2021, 416 emergency physicians completed the survey, representing all Provinces or Territories in Canada (except Nunavut). The mean participant age was 44, 53% were male, 64% had children living at home and 41% were FRCPC and 41% CCFP-EM trained. Sixty percent reported high burnout (either high emotional exhaustion and/or high depersonalization). Increasing age was associated with lower emotional exhaustion and depersonalization; female or nonbinary gender was associated with an increase in emotional exhaustion; and having children living at home was associated with lower depersonalization. **Conclusions:** Most Canadian emergency physicians participating in our study during the COVID-19 pandemic reported high burnout levels. Younger physicians and female physicians were more likely than their coworkers to report high burnout levels. Hospitals should address emergency physician burnout during the pandemic because it is a threat to quality of patient care and retention of the workforce for the future.
21	Myran, D. T., Cantor, N., Rhodes, E., Pugliese, M., Hensel, J., Taljaard, M., . . . Tanuseputro, P.	2022	Physician Health Care Visits for Mental Health and Substance Use During the COVID-19 Pandemic in Ontario, Canada.	• N/A	**Importance:** Physicians self-report high levels of symptoms of anxiety and depression, and surveys suggest these symptoms have been exacerbated by the COVID-19 pandemic. However, it is not known whether pandemic-related stressors have led to increases in health care visits related to mental health or substance use among physicians. **Objective:** To evaluate the association between the COVID-19 pandemic and changes in outpatient health care visits by physicians related to mental health and substance use and explore differences across physician subgroups of interest. **Design, setting, and participants:** A population-based cohort study was conducted using health administrative data collected from the universal health system (Ontario Health Insurance Plan) of Ontario, Canada, from March 1, 2017, to March 10, 2021. Participants included 34 055 physicians, residents, and fellows who registered with the College of Physicians and Surgeons of Ontario between 1990 and 2018 and were eligible for the Ontario Health Insurance Plan during the study period. Autoregressive integrated moving average models and generalized estimating equations were used in analyses. **Exposures:** The period during the COVID-19 pandemic (March 11, 2020, to March 10, 2021) compared with the period before the pandemic.

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					Main outcomes and measures: The primary outcome was in-person, telemedicine, and virtual care outpatient visits to a psychiatrist or family medicine and general practice clinicians related to mental health and substance use. **Results:** In the 34 055 practicing physicians (mean [SD] age, 41.7 [10.0] years, 17 918 [52.6%] male), the annual crude number of visits per 1000 physicians increased by 27%, from 816.8 before the COVID-19 pandemic to 1037.5 during the pandemic (adjusted incident rate ratio per physician, 1.13; 95% CI, 1.07-1.19). The absolute proportion of physicians with 1 or more mental health and substance use visits within a year increased from 12.3% before to 13.4% during the pandemic (adjusted odds ratio, 1.08; 95% CI, 1.03-1.14). The relative increase was significantly greater in physicians without a prior mental health and substance use history (adjusted incident rate ratio, 1.72; 95% CI, 1.60-1.85) than in physicians with a prior mental health and substance use history. **Conclusions and relevance:** In this study, the COVID-19 pandemic was associated with a substantial increase in mental health and substance use visits among physicians. Physician mental health may have worsened during the pandemic, highlighting a potential greater requirement for access to mental health services and system level change.
22	Natsuhara, K. H., & Borno, H. T.	2021	The Distance Between Us: the COVID-19 Pandemic's Effects on Burnout Among Resident Physicians.	• Burnout • COVID-19 • Medical education • Well-being	Entering the second year of the COVID-19 pandemic, we reflect on how this public health crisis has amplified burnout in the medical profession. In particular, the pandemic has had a significant impact on medical residents. Recognizing trainee burnout as a side effect of the pandemic is crucial and highlights the need for programmatic change to support medical trainees. We reviewed the literature and propose multiple interventions to improve trainee well-being, targeting individual, peer-to-peer, and system levels. The pandemic has highlighted the importance of institutional support for medical trainees to prevent burnout and protect the pipeline of future physicians.
23	Nguyen, A. T., Kim, S., Keyes, M., Petereit, D. G., Mourtada,	2022	Evaluation of burnout in physician members of the American	• Brachytherapy • Burnout • COVID-19 • Emotional exhaustion	**Purpose:** To evaluate the prevalence of burnout among brachytherapy specialists and to identify factors associated with burnout. **Methods and materials:** An anonymous, online, cross-sectional survey was administered to non-trainee physician members of the American Brachytherapy Society. Burnout was evaluated using the validated Maslach Burnout Inventory-Human Services Survey (MBI-HSS). Demographic and practice-specific questions

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	F., Rossi, P. J., . . . Kamrava, M.		Brachytherapy Society.	• Maslach burnout inventory-human service survey • Physician burnout • Radiation Oncology	were collected from respondents. Univariate and multivariable analysis of outcomes were performed using probabilistic index models. **Results:** Overall, 51 of 400 physicians responded (13% response rate). Fifty-seven percent of respondents demonstrated at least one symptom of professional burnout. However, only 6% of respondents met strict criteria for high burnout. Analysis of the individual MBI-HSS subdomains demonstrated higher subscale scores for emotional exhaustion and depersonalization, but also higher scores for personal accomplishment. On multivariable analysis after adjusting for increased feelings of burnout due to the COVID-19 pandemic or total hours of work per week, younger age was associated with both increased subscale scores for emotional exhaustion ($p = 0.026$) and lower personal accomplishment ($p = 0.010$). Lastly, nearly half of all respondents (47%) reported increased feelings of burnout due to the COVID-19 pandemic. Respondents from academic facilities were significantly more likely to report increased burnout due to COVID-19 compared to those from non-academic facilities (odds ratio, 7.04; 95% CI 1.60-31.0; $p = 0.010$). **Conclusions:** Nearly 60% of brachytherapists demonstrated symptoms of professional burnout, which is higher than other radiation oncology groups (academic chairs, program directors, residents). Managing stressors related to workload, COVID and support for junior physicians are potential areas for improving feelings of burnout.
24	Romanelli, J., Gee, D., Mellinger, J. D., Alseidi, A., Bittner, J. G., Auyang, E., . . . Feldman, L. S.	2020	The COVID-19 reset: lessons from the pandemic on Burnout and the Practice of Surgery.	• COVID-19 • Surgeon burnout • Wellness	**Background:** Burnout among physicians is an increasing concern, and surgeons are not immune to this threat. The ongoing COVID-19 pandemic has caused dramatic changes to surgeon workflow, often leading to redeployment to other clinical areas, slowdown and shutdown of elective surgery practices, and an uncertain future of surgical practice in the post-pandemic setting. Paradoxically, for many surgeons who had to prepare for but not immediately care for a major surge, the crisis did allow for reflective opportunities and a resetting of priorities that could serve to mitigate chronic patterns contributory to Burnout. **Methods:** SAGES Reimagining the Practice of Surgery task force convened a webinar to discuss lessons learned from the COVID pandemic that may address burnout.

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					Results: Burnout is multifactorial and may vary in cause among different generation/experience groups. Those that report burnout symptoms often complain of lacking purpose or meaning in their work. Although many mechanisms to address Burnout are from a defensive standpoint-including coping mechanisms, problem solving, and identification of a physician having wellness difficulties-offensive mechanisms such as pursuing purpose and meaning and finding joy in one's work can serve as reset points that promote thriving and fulfillment. Understanding what motivates physicians will help physician leaders to develop and sustain effective teams. Reinvigorating the surgical workforce around themes of meaning and joy in the service rendered via our surgical skills may diminish Burnout through generative and aspirational strategies, as opposed to merely reactive ones. Fostering an educational environment free of discriminatory or demeaning behavior may produce a new workforce conducive to enhanced and resilient wellbeing at the start of careers. **Conclusion:** Surgeon wellness and self-care must be considered an important factor in the future of all healthcare delivery systems, a need reaffirmed by the COVID-19 pandemic.
25	Smida, M., Khoodoruth, M. A. S., Al-Nuaimi, S. K., Al-Salihy, Z., Ghaffar, A., Khoodoruth, W. N. C., . . . Ouanes, S.	2021	Coping strategies, optimism, and resilience factors associated with mental health outcomes among medical residents exposed to coronavirus disease 2019 in Qatar.	• COVID-19 • Coping • medical residents • optimism • resilience	**Objective:** The aim of this study is to examine the association between coping strategies, resilience, optimism and different mental health outcomes like stress, anxiety, and depression among the medical residents' during the COVID-19 pandemic, with consideration of different factors like seniority, frontliner, gender, and coping style. **Methods:** An electronic survey was sent to all medical residents in Qatar. Depression, anxiety, and stress were assessed by the DASS-21. Professional quality of life was measured by the ProQOL scale. The coping mechanisms were assessed with the Brief-COPE, and resilience was measured by the Brief Resilience Scale. **Results:** The most commonly used coping strategies were acceptance, religion, and active coping. The avoidant coping style scores were higher among junior residents ($p = .032$) and non-COVID-19 frontliners ($p = .039$). Optimism LOT-R score was higher in senior than in junior residents ($p < .001$). Lower avoidant coping scores, higher optimism, and higher resilience were associated with lower stress, anxiety, and depressive symptoms.

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					Conclusion: It seems that avoidant coping styles can exacerbate depressive, anxiety, and stress symptoms in medical residents amidst the COVID-19 pandemic. Strategies promoting optimism, resilience, and approach coping styles can decrease the mental health burden of the pandemic on medical residents.
26	Smith, J., Abouzaid, L., Masuhara, J., Noormohamed, S., Remo, N., & Straatman, L.	2022	"I may be essential but someone has to look after my kids": women physicians and COVID-19.	• COVID-19 • Gender • Health systems • Leadership • Physicians • Women	**Objectives:** This paper analyzes results from focus groups held with women physicians in British Columbia which explored questions around how gender norms and roles influenced their experiences during COVID-19. **Methods:** Four virtual focus groups were organized between July and September 2020. Participants (n = 27) were voluntarily recruited. Data were analyzed using applied thematic analysis. **Results:** In addition to the COVID-19-related changes experienced across the profession, women physicians faced distinct challenges related to an increase in unpaid care responsibilities, and often felt excluded from, and occasionally dismissed by, leadership. Women leaders often felt their contributions were unrecognized and undervalued. Participants drew strength from other women leaders, peer networks, and professional support, but these strategies were limited by unpaid care and emotional labour demands, which were identified as increasing risk of burnout. **Discussion:** Even though women physicians hold a degree of relative privilege, unpaid care work and gender norms contribute to distinct secondary effects of COVID-19. Women physicians link these to pre-pandemic assumptions (within families and communities) that women would absorb care deficits at their own cost. Health system leadership continues to reflect a masculine normative experience wherein the personal and professional are separated, and which devalues the emotional labour often associated with feminine leadership. The strategies participants employed to address negative impacts, while demonstrating resourcefulness and peer support, reflect individualistic responses to social-structural challenges. There is a need for greater recognition of women's contributions at home and work, increased representation in decision-making, and practical supports such as childcare and counselling.
27	Steil, A., Pereira Tokeshi, A. B., Bernardo, L. S.,	2022	Medical residents' mental distress in the COVID-19	• N/A	**Purpose:** Medical residents' mental health is currently an issue of concern for medical educators worldwide. The COVID-19 pandemic has raised the greatest concerns given the psychological effects of this scenario on medical residents on

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	da Silva Neto, G. P., Davi, R. F. J., Bárbara, A. F. S., . . . Teixeira Gois, A. F.		pandemic: An urgent need for mental health care.		the frontlines of the pandemic. To assess the psychological impact of the COVID-19 pandemic on physicians in residency training, the collective symptoms of burnout, depression and anxiety are used to identify the residents' beliefs and clinical practices related to COVID-19 patients and their behaviors concerning disease prevention. **Method:** This observational study involved 3071 medical residents from all regions of Brazil. An online questionnaire assessed the presence of burnout using the Oldenburg Burnout Inventory, depressive symptoms using the Patient Health Questionaire-9, anxiety symptoms using the Generalized Anxiety Disorder-7, and COVID-19 Impact Questions to assess the residents' beliefs and clinical practices related to COVID-19 patients. Exploratory analyses, logistic regression and multinomial regression analysis were performed in this investigation. **Results:** Moderate and severe depressive symptoms were the most common (67.7%) followed by anxiety symptoms (52.8%) and burnout (48.6%). The difference between residents with or without contact with COVID-19 patients was significant increased when analyzing different aspects of clinical practice, behavior, substance use and mental health. **Conclusions:** These results suggest an increase in depression and anxiety symptoms among medical residents dealing with COVID-19, upstaging previous concerns about medical residents' mental health. The prevalence of burnout is similar to that of a nonpandemic scenario. Considering the severity of the pandemic scenario and the overburden of healthcare services, medical residents' mental health deserves special care.
28	Ting, D. K., Poonja, Z., Lee, K., & Baylis, J.	2022	Burnout crisis among young and female emergency medicine physicians during the COVID-19 pandemic: applying the six	• N/A	No abstract available.

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			areas of worklife model.		
29	Vazquez Morgan, M.	2021	Promoting Student Wellness and Self-Care During COVID 19: The Role of Institutional Wellness.	• COVID-19 • Burnout • medical students and residents • poor mental health • self-care	Stress and burnout are serious and growing threats to the mental health of medical trainees. Recent estimates of burnout in medical students and residents are quite high, with more than half displaying signs of stress, anxiety and depression. The COVID-19 pandemic has only heightened the state of poor mental health in these student populations. It is the position of LSU Health Shreveport Office of Institutional Wellness that a critical need exists for academic institutions to evaluate challenges to self-care and wellbeing in medical trainees. Such evaluations may pave the way for the development of effective institutional wellness initiatives and strategies, with the goal of reducing barriers to self-care to promote better mental and physical health, and facilitate improved quality of life in medical students and residents.
30	Vercio, C., Loo, L. K., Green, M., Kim, D. I., & Beck Dallaghan, G. L.	2021	Shifting Focus from Burnout and Wellness toward Individual and Organizational Resilience.	• Wellness • Burnout • resilience	Burnout is reported to be epidemic among physicians and medical trainees, and wellness has been the predominant target for intervention in academic medicine over the past several years. However, both burnout and wellness suffer from a lack of standardized definition, often making interventions difficult to generalize and extrapolate to different sites. Although well-meaning, current frameworks surrounding wellness and burnout have limitations in fully addressing the challenges of improving physician mental health. Wellness as a framework does not inherently acknowledge the adversity inevitably experienced in the practice of medicine and in the lives of medical trainees. During a crisis such as the current pandemic, wellness curricula often do not offer adequate frameworks to address the personal, organizational, or societal crises that may ensue. This leaves academic institutions and their leadership ill-equipped to appropriately address the factors that contribute to burnout. More recently, resilience has been explored as another framework to positively influence physician wellness and burnout. Resilience acknowledges the inevitable adversity individuals encounter in their life and work, allowing for a more open discussion on the tensions and flexibility between facets of life. However, emphasizing personal resiliency without addressing organizational resiliency may leave physicians feeling alienated or marginalized from critical support and resources that organizations can and should provide.

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					Despite intense focus on wellness and burnout, there have not been significant positive changes in physicians' mental health. Many interventions have aimed at the individual level with mindfulness or other reflective exercises; unfortunately these have demonstrated only marginal benefit. Systems level approaches have demonstrated more benefit but the ability of organizations to carry out any specific intervention is likely to be limited by their own unique constraints and may limit the spread of innovation. We believe the current use of these conceptual lenses (wellness and burnout) has been clouded by lack of uniformity of definitions, an array of measurement tools with no agreed-upon standard, a lack of understanding of the complex interaction between the constructs involved, and an over-emphasis on personal rather than organizational interventions and solutions. If the frameworks of burnout and wellness are limited, and personal resilience by itself is inadequate, what framework would be helpful? We believe that focusing on organizational resilience and the connecting dimensions between organizations and their physicians could be an additional framework helpful in addressing physician mental health. An organization connects with its members along multiple dimensions, including communication, recognition of gifts, shared vision, and sense of belonging. By finding ways to positively affect these dimensions, organizations can create change in the culture and mental health of physicians and trainees. Educational institutions specifically would be well-served to consider organizational resilience and its relationship to individuals.
31	Wang, Y., Li, Y., Jiang, J., Feng, Y., Lu, D., Zhang, W., & Song, H.	2020	COVID-19 outbreak-related psychological distress among healthcare trainees: a cross-sectional study in China.	• COVID-19 • Epidemiology • medical education & training • mental health • psychiatry	**Objectives:** The COVID-19 outbreak has caused enormous strain on healthcare systems, and healthcare trainees, which comprise the future healthcare workforce, may be a vulnerable group. It is essential to assess the psychological distress experienced by healthcare trainees during the COVID-19 outbreak. **Design, setting and participants:** A cross-sectional study with 4184 healthcare trainees at Sichuan University in China was implemented during 7-13 February 2020. Participants were grouped by training programmes (medicine, medical technology and nursing) and training stages (undergraduate, postgraduate and residency). **Main outcomes:** COVID-19-related psychological distress and acute stress reaction (ASR) were assessed using the Kessler 6-item Psychological Distress Scale and the

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					Impact of Event Scale-Revised, respectively. We estimated the ORs of distress by comparing trainees across programmes and training stages using multivariable logistic regression. **Results:** Significant psychological distress was found in 1150 (30.90%) participants and probable ASR in 403 (10.74%). Compared with the nursing trainees, the medical trainees (OR 1.54, 95% CI 1.22 to 1.95) reported a higher burden of psychological distress during the outbreak, while the medical technology trainees (OR 1.25, 95% CI 0.97 to 1.62) reported similar symptom scores. Postgraduates (OR 1.55, 95% CI 1.16 to 2.08) in medicine had higher levels of distress than their undergraduate counterparts did, whereas the nursing residents (OR 0.38, 95% CI 0.20 to 0.71) reported a lower burden than did nursing undergraduates. A positive association was found between having active clinical duties during the outbreak and distress (OR 1.17, 95% CI 0.98 to 1.39), particularly among the medical trainees (OR 1.85, 95% CI 1.47 to 2.33) and undergraduates (OR 4.20, 95% CI 1.61 to 11.70). No clear risk patterns of ASR symptoms were observed. **Conclusions:** Medical trainees, particularly postgraduates and those with active clinical duties, were at risk for psychological distress during the COVID-19 outbreak. Stress management may be considered for high-risk healthcare trainees.
32	Weygandt, P. L., Jordan, J., Caretta-Weyer, H., Osborne, A., & Grabow Moore, K.	2021	Impact of the COVID-19 pandemic on emergency medicine education: Insights from faculty and residents.	• N/A	**Objectives:** The COVID-19 pandemic continues to impact health systems across the United States and worldwide in an unprecedented way; however, its influence on frontline medical trainees' educational experiences is unknown. Our objective was to determine the effects of COVID-19 on emergency medicine (EM) training programs and residents. **Methods:** We performed a mixed-methods cross-sectional survey study of faculty and residents at programs registered with Foundations of Emergency Medicine. Participants completed an online survey consisting of closed and open-ended response items. We reported descriptive statistics for discrete and continuous data. Free-response data were analyzed qualitatively using a thematic approach. **Results:** Ninety-two percent of faculty (119/129) and 47% (1,965/4,154) of residents responded to our survey. We identified three major themes related to effects on learning: 1) impact on clinical training, 2) impact on didactic education, and 3) impact on the trainee. Nearly all residencies (96%, 111/116) allowed

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					residents to work with patients suspected of having COVID-19, although fewer (83%, 96/115) allowed residents to intubate them. We found that 99% (1918/1928) of residents experienced virtual didactics. Faculty and trainees noted multiple educational challenges and strategies for adaptation. Trainees also expressed concerns about stress and safety. **Conclusion:** COVID-19 has impacted EM education in many ways including clinical training, didactic education, and trainee emotional state and concentration. Challenges and suggested solutions for learning in the virtual environment were also identified. While the pandemic continues to evolve and impact EM residents in various ways, our results may inform strategies to support medical educators and trainees during pandemics or other periods of significant disruption or crisis.
33	Wohlfarth, B., Gloor, B., & Hautz, W. E.	2021	Challenges of students and residents of human medicine in the first four months of the fight against the Covid-19 pandemic - Implications for future waves and scenarios.	• N/A	**Introduction:** In the fight against the Covid-19 pandemic, medical students and residents are expected to adapt and contribute in a healthcare environment characterized by ever-changing measures and policies. The aim of this narrative review is to provide a summary of the literature that addresses the challenges of students and residents of human medicine in the first 4 months of the fight against the Covid-19 pandemic in order to identify gaps and find implications for improvement within the current situation and for potential future scenarios. **Methods:** We performed a systematic literature search and content analysis (CA) of articles available in English language that address the challenges of students and residents of human medicine in the first 4 months of the fight against the Covid-19 pandemic. **Results:** We retrieved 82 articles from a wide range of journals, professional backgrounds and countries. CA identified five recurring subgroup topics: "faculty preparation", «uncertainties and mental health», «clinical knowledge», «rights and obligations» and «(self-) support and supply». Within these subgroups the main concerns of (re-)deployment, interruption of training and career, safety issues, transmission of disease, and restricted social interaction were identified as potential stressors that hold a risk for fatigue, loss of morale and burnout. **Discussion:** Students and residents are willing and able to participate in the fight against Covid-19 when provided with appropriate deployment, legal guidance, safety measures, clinical knowledge, thorough supervision, social integration and mental health support. Preceding interviews to decide on reasonable voluntary

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					deployment, the use of new technology and frequent feedback communication with faculties, educators and policymakers can further help with a successful and sustainable integration of students and residents in the fight against the pandemic. **Conclusion:** It is critical that faculties, educators and policymakers have a thorough understanding of the needs and concerns of medical trainees during pandemic times. Leaders should facilitate close communication with students and residents, value their intrinsic creativeness and regularly evaluate their needs in regards to deployment, knowledge aspects, safety measures, legal concerns and overall well-being.

Appendix B: Interview Script

Phenomenological study of postgraduate trainees' experiences with mental health well-being during COVID-19 pandemic

Respondent code #: _____

Discipline/program of study: _____

Health Region: _____

Year: _____

Gender: _____

1. Can you describe how your experiences as a 'trainee' have been affected as a result of the COVID-19 pandemic?

   Prompts:

   a. How have your specific 'educational' and/or 'training' experiences as a learner been affected?
   b. How have specific 'clinical' responsibilities you were assigned been affected?
   c. What have been some specific challenges you have encountered?
      i. With work-life balance?
      ii. Your emotional and/or mental health?
      iii. Your physical well-being?
      iv. With your personal and/or social life?

2. Have you 'learned' anything new or different on a professional and/or personal level as a result of training and working during a public health emergency that has helped you develop as a health care provider?
   Prompts:

   a. Have you gained any useful 'insights' from your educational, professional and/or personal experiences during COVID?

3. How do you feel your experiences as a trainee during COVID-19 will affect you as a health care provider in the future?
   Prompts:
   a. What have been some of the 'positive' aspects of your experiences during COVID-19 that will help you in your future professional career?
   b. What have been some of the 'negative' aspects of your experiences during COVID-19 that could hinder you in your future professional career?

4. How would you describe your experiences in adjusting and adapting to the changes in your training and work responsibilities during COVID-19?

   Prompts:

   a. Do you feel you were well prepared to manage and lead these changes?
   b. Were there any insights, knowledge, skills or abilities that might have enhanced your adaptability and agility to cope or even thrive in response to stress?
   c. Based on your personal experience what would be your advice to another postgraduate trainee about the value of immediate supports such as family and friends during COVID?

5. What have been sources of strength or support for you during COVID-19?

   Prompts:

   a. How have you sought support for any stress, anxiety or other negative emotions you may have experienced as a result of the changes brought on by COVID-19?
   b. What types of support systems or programs have been particularly helpful to you?
   c. If you were to build a program of support systems for future trainees experiencing a public health emergency, what do you feel would be most beneficial and useful?