COVID-19 – Strategies Adaptable from Healthcare to Public Health Settings to Support the Mental Health and Resilience of the Workforce during the COVID-19 Pandemic Recovery

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Introduction

The purpose of this synthesis is to summarize evidence-based interventions and strategies to support the mental health and resilience of the public health workforce following the prolonged Coronavirus Disease 2019 (COVID-19) pandemic response. Due to the anticipated dearth of literature specifically aimed at the public health workforce, this review aims to identify interventions intended to promote or protect frontline workers' mental health that have been employed or recommended in public health settings, or are adaptable from healthcare settings to the Ontario public health context (i.e., public health units) to provide mental health support during the post-pandemic period.

Key Findings

- The COVID-19 pandemic has negatively impacted the mental health of the healthcare and public health workforce and adequate supports are essential to protect and improve the public health workforce's mental health and resilience. Interventions and strategies adaptable from healthcare to public health settings may be implemented at one or more levels of the socio-ecological model: individual and team, organization and management, and community and policy.

- Individual and team-level strategies include education and training, specific mental health interventions, and peer and social support. Evidence indicates these types of interventions may help improve individual mental health outcomes and promote resilience among participants. Limitations associated with individual and team approaches are reluctance to disclose mental health concerns, inadequate resources and placing onus on individuals to initiate and continue the intervention.

- Organizational and management strategies include staffing and workload management, prevention and prioritization, communication, effective leadership and workplace cohesion. A recurring concept across the available literature is that organization-level strategies are beneficial for staff mental health and any individual-level supports should be supplemented with organizational responses or strategies.

- Interventions at the policy level include strategic pandemic preparedness policies and ensuring occupational health policies are supportive of workers' health and wellbeing. Normalizing the institutional funding for mental health supports and incorporating stigma reduction strategies into mental health programs can support a reduction in stigma surrounding the experience of negative psychological impacts of the pandemic response.

Background

The COVID-19 pandemic has placed unprecedented pressures on healthcare and public health systems and services in Canada and around the world. There are pervasive and profound impacts on the mental health of frontline healthcare workers due to the current global COVID-19 pandemic, as occurred during previous pandemics including Middle East Respiratory Syndrome (MERS), Severe Acute Respiratory Syndrome (SARS), Ebola and H1N1.[1,2] Individual, organizational and system level factors impact the mental health of healthcare workers during and following a prolonged emergency event such as the COVID-19 pandemic.[3] During previous pandemics, individuals working in healthcare and other frontline settings were found to experience increased levels of burnout, psychological distress and post-traumatic stress.[4,5] The COVID-19 pandemic has led to similar mental health outcomes among healthcare workers,[2,6] and an understanding of the impacts is only beginning to emerge.

In contrast to that related to frontline healthcare workers, there is much less available literature examining the impact of the pandemic on the public health workforce. What is available, however, indicates public health workers also experience significant mental health concerns. A cross-sectional survey of public health professionals working in the United States (US) during the COVID-19 pandemic found that symptoms of anxiety, depression, burnout and poor physical health were widely reported.[7] Results also showed increases in plans to leave or retire from public health in September 2020 compared to January 2020 among public health workers.[7] These findings are supported by a recent study reporting among 26,174 public health workers in the US, 53% reported symptoms of at least one mental health condition in the last two weeks.[8] Traumatic events are also described, with 11.8% of respondents receiving job-related threats, and 23.4% feeling bullied, harassed or threatened due to their work during the COVID-19 pandemic.[8]

The objective of this evidence synthesis was to summarize literature related to interventions or strategies aimed at promoting or protecting mental health and resilience, and identify real-world resources to provide interventions and strategies for public health agencies to support the mental health and resilience of their workforces during the COVID-19 pandemic recovery. Literature without a focus on mental health interventions but on general staff support strategies with potential to indirectly positively impact mental health (e.g., additional compensation during the pandemic, flexible schedules) were not in scope of this synthesis.

Methods

Public Health Ontario (PHO) Library Services conducted a search of the literature published from 2020 onward for interventions with the objective to facilitate workforce mental health recovery in the post-pandemic period in healthcare and public health settings. Search terms included those related to COVID-19, health and public health personnel and occupations, mental health and resilience, and intervention types. The following databases were searched for peer-reviewed and pre-print literature on May 17 and May 18, 2021: MEDLINE, Embase, CINAHL, Global Health, Scopus, and National Institutes of Health (NIH) COVID-19 Portfolio for Preprints. After duplicates were removed, the titles and abstracts of 1,467 records were screened for relevance. Inclusion was limited to review-level evidence related to the

mental health of public health or healthcare frontline workers, reviews must have included strategies, interventions, or recommendations. Literature focused on general staff support without a focus on mental health or resilience was excluded. After title and abstract screening, 194 full text records were reviewed for eligibility, and 28 relevant reviews were included in this synthesis. Details of the full literature search strategy are available upon request. Quality appraisal of included reviews was completed using the Health Evidence Quality Assessment Tool.[9]

A targeted search of grey literature was also conducted to obtain available interventions, strategies or tools (i.e., frameworks, guidance) published or implemented by health or public health organizations to improve the mental health and resilience of their workforce during post-pandemic recovery. Key search terms were applied to custom Google search engines between June 8 and June 9, 2021. Additional resources provided by public health stakeholders and subject matter experts were also included. Details of the full grey literature search strategy are available upon request.

Results

We identified 28 relevant reviews from the published and pre-print literature for inclusion in this synthesis. All reviews included recommendations for strategies or interventions to improve mental health and resilience of frontline healthcare workers in the context of the COVID-19 pandemic or previous pandemics (i.e., SARS, MERS, H1N1, Ebola). Our search did not identify literature on interventions specifically aimed at supporting the mental health and resilience of the public health workforce. However, evidence related to frontline healthcare workers may be relevant to, and reasonably adopted by, public health settings, including public health agencies.

Using the Health Evidence Quality Appraisal Tool,[9] six reviews were rated as strong,[2,6,10-13] 14 rated as moderate,[14-27] and eight rated as weak.[5,28-34] The common methodological weaknesses across the reviews were a lack of comprehensive search strategy, the absence of quality appraisal of included studies, and quality of included studies not being considered in the synthesis and weighting of overall results. Many of the included reviews include evidence from cross-sectional, descriptive and qualitative studies demonstrating healthcare workers' needs and potentially helpful strategies, there is less available evidence from intervention studies demonstrating actual impact or effectiveness, and this limitation should be considered when interpreting results.

Strategies to support the mental health and resilience of healthcare workers identified in the review literature are summarized below based on the level of intervention according to the socio-ecological model:[35] individual and team; organization and management; and community and policy. Strategies within each level are grouped into broad intervention themes that define the focus of the intervention or strategy. Of note, several interventions may reasonably fall under multiple themes or levels, or be combined in a multi-faceted approach with other interventions to provide a more comprehensive support system.

Results of the grey literature search are presented in **Appendix A** to provide real-world interventions, tools, or strategies for organizations to consider using to promote the mental health and resilience of their workforce during post-pandemic recovery.

Individual and Team

EDUCATION AND TRAINING

Multiple reviews examined or recommended workplace education interventions for staff on mental health, resilience, stress, burnout, mindfulness and coping.[6,11-13,17-19,21,26-28,31] These interventions are

typically provided by a workplace in the form of voluntary education or training sessions to provide general information or strategies for participants to carry forward and utilize in their work or personal lives. These programs are implemented in a variety of ways including: in-person, virtual, group-based and in self-directed formats.

A systematic review by Labrague (2021) investigated strategies to support healthcare workers' resilience during the COVID-19 pandemic.[11] Several recommendations to enhance resilience, coping behaviours and social support were offered in the literature identified in Labrague's (2021) review, including the implementation of individual and group evidence-based education designed to enhance resilience and strengthen defences against various mental and psychological consequences of the pandemic. Training on coping skills was seen as beneficial for strengthening the psychological wellbeing of healthcare providers.[11]

A rapid review by Serrano-Ripoll et al. (2020) describes interventions to reduce the mental health impact of pandemics on healthcare workers.[6] The review found group education on stressors associated with pandemic influenza, and organizational and individual approaches to reduce stress resulted in participants feeling more prepared to cope. Computer-assisted resilience training to prepare for a potential influenza pandemic was found to improve participants' confidence in support and training, self-efficacy and ability to cope with interpersonal problems. A self-directed workplace exercise intervention intended to reduce stress during the COVID-19 pandemic was associated with no improvement and possibly worsening anxiety, depression and post-traumatic stress disorder (PTSD) measures among the intervention participants.[6]

A rapid narrative review by Callus et al. (2020) summarized studies and recommendations related to stress reduction techniques for healthcare providers working during severe coronavirus infection outbreaks (i.e., SARS, MERS, COVID-19), including organizing seminar interventions for staff around coping strategies.[13]

General education and training topics suggested across multiple reviews to promote the mental health of frontline workers include:

- Pandemic-related stressors and mental health risks: providing information related to pandemic mental health risk factors have been associated with improvements to mental health outcome measures such as insomnia, PTSD and anxiety.[18,19]
- Resilience and coping skills: reported impacts of various resilience and coping training programs across reviews include improved resilience, reduced symptoms of depression, stress, fear, tiredness, and descriptive themes include staff reporting such trainings provided by their employers were helpful.[6,11,13,18,21,27,28] An educational program addressing self-care skills and awareness of compassion fatigue were found to increase staff retention rates at one and four months follow-up, and a "supportive component" added to the educational intervention led to reductions in burnout.[21]
- General COVID-19 information: provision of general healthcare information is recommended at both the individual and organizational level.[18,19] A scenario-based simulation training during COVID-19 was found to improve assertiveness, mental preparedness, self-efficacy, internal locus of control and internal locus of responsibility among staff.[18]

MENTAL HEALTH SUPPORT INTERVENTIONS

In addition to equipping staff with basic knowledge of pandemic-related mental health risks and coping strategies, providing more specific supports to individuals who identify concerns about their mental health or wellbeing is frequently recommended in the literature.[2,5,13,14,17-19,23,26,27,29-31,33]

A rapid narrative review by Callus et al. (2020) identified evidence that a feasible option to provide mental health resources and interventions is through the use of virtual platforms (e.g., mobile phones, apps or Internet devices), which can positively affect work and mental wellbeing for healthcare professionals.[13] Due to increased demand for mental health supports during the COVID-19 pandemic, engagement with staff may be improved by implementing and providing psychological support services through virtual platforms.[13] A literature review by Drissi et al. (2021) notes while empirical evidence about virtual interventions is still emerging, there is evidence of high uptake, positive impact on helping staff adjust to the pandemic situation and positive qualitative feedback.[33]

A rapid review by Magill et al. (2020) found participants across all included studies reported specific interventions and general psychological support services were beneficial to their mental health. Qualitative results included reduced stress, depression, anxiety and sleep concerns.[5] Only one study quantitatively assessed effectiveness of a specific peer-led mental health intervention, and found it reduced symptoms of stress, depression and anxiety.[5]

Other mental health support interventions for individual staff described in this body of evidence include:

- Referral to specialty mental health services for staff expressing or exhibiting significant mental health concerns (e.g., Cognitive behavioural therapy [CBT] is supported by evidence as an effective intervention).[2,14,19,23,31] Evidence of the effectiveness of Psychological First Aid is mixed and in some cases has been found to be ineffective, or to worsen mental health symptoms.[12,31]
- Telephone crisis lines and counselling have been reported to be desired by frontline staff, and is a commonly reported intervention implemented in COVID-19 pandemic contexts, often as part of a multi-faceted approach; however, quantitative effectiveness evidence for these specific supports are lacking.[2,23,26,27,29]
- There is some evidence to recommend music or arts therapy options.[18,19] One intervention consisting of curated playlists provided to healthcare workers during the COVID-19 pandemic resulted in decreased sadness, fear, tiredness and worry among participants.[18]

PEER AND SOCIAL SUPPORT

Several reviews include recommendations to promote peer and social support as a strategy to support individual staff or team wellbeing.[2,10,11,15,18,22,27,28,31] Workplace groups or teams may create formal or informal peer support systems which can promote mental health and resilience among those who participate. Peer support may be implemented in-person or virtually, and with groups of varying sizes and disciplines.

- A rapid review by Kisely et al. (2020) includes recommendations from the literature on how to deal with psychological problems in healthcare workers during novel outbreaks at the individual level, based on evidence related to factors which increase or decrease the risk of adverse psychological outcomes.[10] Peer support recommendations from the literature reviewed include establishing a staff "buddy" system to support personal precautionary measures, encouragement among peers, increased support from family and friends and opportunities for reflection on the effects of stress.[10] Two additional reviews also include recommendations to

implement staff "buddy" systems which can allow for validation and normalization of psychological responses.[27,31]

- Findings from a systematic review by Labrague (2021) suggest the extent and quality of a frontline workers' connections and relationships with colleagues are associated with resilience and retention.[11] In addition to adequate managerial support, support from colleagues, peers, friends and family was associated with reduced levels of traumatic stress and emotional distress.[11]

- Multiple reviews broadly support providing routine opportunities in the workplace for social connections as a strategy to improve staff wellbeing and promote collegial support.[2,10,11,22,27,28,31] Evidence also suggests there are benefits to providing peer-support opportunities where specific work- and pandemic-related concerns can be discussed.[15,18,22] For example, online Balint groups (regular structured meetings to discuss specific cases or situations at work)[36] conducted during the COVID-19 pandemic were found to improve anxiety and resilience among physician participants.[15]

Organization and Management

STAFFING AND WORKLOAD MANAGEMENT

Some of the most common recommendations for organizational or management-level interventions to support mental health and resilience did not specifically target mental health, but were related to workload management, staffing and ensuring staff basic needs are met in the workplace.[5,6,10-13,16,17,19,22,24,26,28-31] As all available literature is based in healthcare settings, certain elements may be more readily applicable to those clinical settings, but the basic principles are important to consider in public health agency settings as well.

A rapid review by Muller et al. (2020) reported a common theme across the literature that during the COVID-19 pandemic, healthcare workers indicated preference for manageable and safe working conditions, and meaningful organizational changes (e.g., adequate rest and personal protective equipment [PPE]), rather than individual counselling or psychological interventions.[2] For example, an organization-wide intervention included a telephone hotline to connect frontline staff with immediate access to psychological support, online courses and group-based activities to relieve stress. This was found to have poor uptake and staff feedback indicated a need instead for adequate PPE, rest and help addressing their patients' psychological distress; therefore, the intervention was adjusted.[2]

Multiple included reviews cite adequate staffing and staff training as key factors to ensuring a manageable workload and minimizing mental health concerns, especially as many staff have been redeployed to new and unfamiliar roles throughout the COVID-19 pandemic.[5,6,16,17,24,28,29] A scoping review by Traverson et al. (2021) found that limited or insufficient training of healthcare workers can lead to dissatisfaction, higher stress levels, higher anxiety and higher potential for error; the review recommended the provision of specific and ongoing training to staff.[17] Studies that compared instructor-led training and video-based training found no difference between the two training modes for healthcare workers' competency and satisfaction.[17]

Multiple reviews suggest that organizations can help minimize the psychological burden on frontline staff by ensuring their basic needs are met in the workplace, including ensuring adequate PPE, rest and food:

- Adequate PPE can alleviate concerns and distress related to COVID-19 infection for healthcare staff and minimize concerns around the spread of COVID-19 to their families.[2,5,6,10,11,13,17,19,24,26,28-31] Authors of this synthesis posit this concept may apply directly to public health workers who work with patients and members of the public.

- Adequate space and time to rest may entail providing a physical space in the workplace that is safe and comfortable to rest (e.g., for frontline clinicians, staff working shiftwork and/or overtime).[10,13,16,17,19,22,28,29]

- Providing adequate food and drink in acute healthcare and response settings may include providing nutritious meals directly to frontline workers when getting away from their workspace for meal breaks is less feasible due workload constraints, and usual meal options may be impacted by COVID-19 restrictions.[10,13,16,28,29]

PREVENTION AND PRIORITIZATION

Multiple included reviews recommend the availability of organizational-level interventions aimed at preventing mental health issues and providing supports and/or referral options to staff for mental health concerns that emerge.[2,5,12,14,16,19,23,27-32] This closely relates to and may overlap with Mental Health Support Interventions section above, but emphasis here is on organization-wide prioritization of mental health and resilience, and availability of supports.

A deliberate prioritization of workforce mental health, organizational dedication of appropriate resources and supportive environments may help reduce the impact of barriers to implementing mental health supports. A systematic review by Pollock et al. (2020) synthesized evidence investigating barriers and facilitators to mental health and resilience workplace interventions during disease outbreaks, epidemics or pandemics.[12] Key barriers include a lack of awareness among frontline workers or organizations of what they need to support their mental health and a lack of resources (e.g., time, staff or skills) needed to implement an intervention. Key facilitators are having a supportive learning environment, the intervention being adaptable to local needs and effective communication.[12]

A rapid review by Magill et al. (2020) suggested that organization-level activities, even those not directly related to mental health, improved adverse psychological outcomes among providers across outbreaks by increasing confidence and enhancing positive psychological effects.[5] Healthcare workers commonly cited effective institutional and organizational support and leadership as being critical to reducing mental distress and burnout, allaying anxiety and fear, and increasing confidence.[5]

In a rapid review by Muller et al. (2020), individual mental health interventions were more prevalent in the literature than organizational interventions.[2] This is highlighted as an important gap, and suggests a focus on individual risk and resilience factors in research may hinder the discovery of underlying organizational factors which could be more appropriate targets of intervention.[2]

Other organizational-level mental health and resilience prevention and prioritization strategies described in the review literature include:

- Proactively monitoring for staff mental health concerns.[14,16,23,27,28,31,32] Certain groups (younger age, lower income, women, those with less work experience and those in direct contact with COVID-19 patients) may be at higher risk of adverse mental health outcomes,[14] and staff may be unlikely to disclose these concerns unprompted.[28]

- Educate, normalize and reduce stigma around the potential for mental health concerns during a pandemic, and the need for mental health supports during a pandemic.[14,16,27]

- Ready availability and accessible processes to provide mental health supports, both informal and professional, to any staff who disclose mental health concerns.[2,5,16,27-29,31,32]

COMMUNICATION

Multiple included reviews report clear and honest communication from organizations and leaders as a key organizational-level priority to manage stress and minimize confusion and distress among staff during a pandemic.[5,10,12,13,16,17,19,26-29,31]

A rapid review by Kisely et al. (2020) synthesized pandemic-related literature on successful measures to manage psychological stress and found that clear communication was the most consistent finding regarding strategies employers can take to minimise the psychological burden of responding to the COVID-19 pandemic on clinical staff.[10] Similarly, a narrative review by Callus et al. (2020) found that regular and honest communication from the leaders of an organization toward the frontline professionals is essential.[13] The facilitation of discussions and exchanges of opinions (e.g., listening groups, email suggestions boxes, town halls and managers visiting staff) can ensure staff voices are heard in decision-making, provision of accurate updates to lower stress levels as much as possible, and to foster a perception of control.[13]

A systematic review by Pollock et al. (2020) examined evidence on barriers and facilitators to mental health and resilience workplace interventions during disease outbreaks, epidemics or pandemics.[12] Authors found that a key facilitator to the implementation of mental health and resilience interventions is effective communication, both formally and socially.[12]

Other communication topics highlighted by the available literature include:

- Up to date information about COVID-19, including infection prevention education, protocols and changes in work arrangements.[5,10,13,16,17,19,26-29,31]

- Commitment to support staff wellbeing and information about where to find organizational supports.[19,26,27]

- Recognition and gratitude for the work and efforts of frontline staff.[17,26,28]

EFFECTIVE LEADERSHIP

Several included reviews include evidence to suggest effective leadership is an important element for mitigating mental health and resilience concerns among staff.[11,17,19,21,22,25,27,31,34]

A systematic review by Labrague (2021) reports several included studies indicate effective leadership as essential to promoting mental health and a resilient work environment for healthcare workers, and adequate supports from managers and leaders were associated with reduced levels of traumatic stress and emotional distress.[11] The review also identified evidence that those in management or leadership positions can better offer support and foster resilience and coping among the workforce by being attentive to the psychological, mental and psychosocial needs of the healthcare workers.[11]

Other factors related to effective leadership reported in the evidence review include:

- Leadership providing acknowledgement and recognition of staff work and efforts.[17,19,27,31]

- Those in leadership positions being visible and engaged with frontline staff.[19,22,27,34]

- Leadership making efforts to be aware of staff concerns and needs.[11,25,27]

- Leadership generally perceived by staff as effective, competent and able to provide adequate support.[11,21,27,34]

WORKPLACE COHESION

Seven reviews include information related to promotion of workplace cohesion and collegial support, and how that impacts the mental health and well-being of employees.[16,17,20,22,25,29,30] Several of these concepts overlap with the Peer and Social Support theme, as well as the Leadership and Communication themes. This theme refers to organizations and leaders encouraging, prioritizing and facilitating these types of supports.

A rapid review by Juan et al. (2020) explored guidelines related to the mental health and wellbeing of healthcare workers developed during the COVID-19 pandemic alongside themes from qualitative interviews with healthcare workers.[22] A common organizational factor reported across the well-being guidelines and the qualitative interviews was healthcare workers' feelings around being stronger working as a collective and "pulling together" in less hierarchical working conditions, while at the same time maintaining strong leadership and guidance from managers.[22]

A scoping review by Rieckert et al. (2021) identified literature related to the impact of the COVID-19 pandemic on healthcare workers, and strategies or policies to protect their physical and mental health. The review identified several studies that recommended improving workplace environments by "creating a sense of togetherness and positivity", and ensuring that everyone feels that their voices are heard.[16]

This theme is also supported by reviews which identify a need for more collaboration, alongside education and training, to strengthen teams and reduce stress and the psychological impact of responding to the pandemic.[20,25] A key factor is facilitation and encouragement from managers and organizations to promote staff members being supportive of each other, and encouraging participation in peer or community groups formed to provide mutual support among frontline workers.[17,29,30]

Community and Policy

STRATEGIC PANDEMIC PREPAREDNESS POLICIES

Three reviews address policy recommendations and future research directions to improve the system of understanding and addressing the mental health of healthcare workers. A rapid review by Barello et al. (2020) identified evidence-based policy-related strategies to reduce the psychological distress of healthcare workers during pandemics.[24] The policy interventions identified in this rapid review include: strategic policy approaches to pandemic preparedness through effective information regarding infection control interventions in clinical and non-clinical settings; policies to ensure adequate staffing levels to be prepared when an outbreak starts (with special attention paid to the importance of planning appropriate training for healthcare workers); and planning psychosocial supports ahead of the pandemic.

To promote the psychological wellbeing of healthcare workers, institutional support systems and occupational health policies should be designed to promote the psychological wellbeing of healthcare workers.[25] Furthermore, future research and implementation of telehealth in a variety of settings is recommended to protect healthcare worker wellness during future outbreaks.[30]

ADDRESSING STIGMA AND DISCRIMINATION

Six reviews address the need for widespread efforts to tackle discrimination against healthcare workers during pandemic outbreaks as well as stigma and discrimination associated with healthcare workers seeking support to protect or improve their mental health.[5,10,20,24,28,30] Examples of stigma include healthcare workers being feeling socially stigmatized due to their work and others' fear of infection (e.g., being avoided while wearing uniform in public settings), and stigma attached to experiencing or disclosing mental health symptoms and accessing support services. To address the psychological issues caused by the COVID-19 pandemic, communities should also be attentive to the media portrayal of healthcare workers and should work to minimize stigma and discrimination towards healthcare workers.[10] In a rapid review by Magill et al. (2020) the authors suggest an overview of intervention types based on literature identified in the review, most of which is observational evidence related to prevalence and influencing factors of mental health concerns among healthcare workers. One suggestion is that public support for healthcare providers may support their mental health during and after the COVID-19 pandemic.[5] Another rapid review described a recommendation, from a study conducted in the context of the H1N1 pandemic, to develop public campaigns to protect healthcare workers and reduce stigmatization toward them during future pandemic outbreaks.[24]

A review synthesizing evidence-based interventions to cope with psychological challenges suggests online promotion and awareness campaigns to minimize stigma should be implemented in the planning and execution phases of psychological intervention programs for healthcare workers.[20] A narrative review also found that one key strategy for improving healthcare wellness is reducing stigma around mental health symptoms and the psychological impacts of stressful events experienced by healthcare workers.[30]

In a narrative review by Schwartz et al. (2020) the authors propose a well-being framework with seven themes related to the needs of frontline healthcare workers post-pandemic based on their synthesis of included evidence. The authors suggest normalizing the provision of and funding for mental health education and programs can promote uptake of these supports. The routine provision of mental health support should be delivered proactively to protect long-term wellbeing, and federal funding for clinician wellbeing is needed to monitor wellness and establish necessary resources to care for those negatively affected by the COVID-19 pandemic.[28] At an institutional level, leadership should normalize mental health supports by modelling self-care and help-seeking behaviours to ensure availability of mental health resources and develop a culture of caring.[28] On a societal level, a new infrastructure should be established to sustain and supplement existing support programs.[28]

Discussion

The available review-type published and pre-print literature provides a range of mental health and resilience interventions, mainly at individual and organizational-levels and only in primary healthcare settings. There is a distinct lack of literature examining interventions intended to support the mental health of the public health workforce; however, literature is emerging to show this population is experiencing negative mental health outcomes as a results of the COVID-19 pandemic and therefore in need of supports.[7,8] In the absence of literature related specifically to the public health workforce, we posit the best available evidence providing interventions, guiding themes and strategies to support the mental health and resilience of frontline healthcare workers in the context of pandemics, including COVID-19, can be useful and reasonably adapted to public health settings during post-pandemic recovery.

Individual and team-level interventions are categorized into three main themes: education and training, mental health support interventions, and peer and social support. In most cases, though these type of interventions may be initiated in the workplace or in a group setting, it is up to individuals rather than organizations to continue the intervention itself, to initiate participation in the intervention or to carry forward the concepts learned during the intervention over a period of time. Evidence indicates that there are mental health and resilience benefits to be gained from these interventions, and individual or team-level strategies have been widely implemented during the COVID-19 pandemic.

Organizational and management-level interventions are categorized into five main themes: staffing and workload management, prevention and prioritization, communication, effective leadership and workplace cohesion. There are several overlapping concepts across organizational-level interventions and in practice, organization-wide strategies are likely to implement elements from more than one theme. A recurring concept noted across the literature is the benefit of implementing supports at the organizational-level instead of, or at least in addition to, individual-level supports. There is consistent evidence that perceived support from organizations and leadership, including those not directly related to mental health but to ensuring a safe and manageable workload in an environment where workers' basic needs are met, can prevent and reduce mental health and resilience concerns. Allocation of adequate resources to these supports will also help facilitate intervention implementation. Overall, the available evidence suggests that organizations should ensure individual staff are not solely responsible for addressing mental health challenges in the workplace, and should provide enabling environments that minimize distress and provide comprehensive supports to staff.

Compared to individual and organizational-level strategies, there is less available evidence examining community and policy level strategies to address mental health and resilience of frontline healthcare workers. Policy strategies include improving pandemic preparedness policies and ensuring occupational health policies are supportive of workers' health and wellbeing. Community strategies include public campaigns to reduce stigma associated with mental health help-seeking behaviours, and to address discrimination or stigma against healthcare workers experienced during the pandemic response. The literature also points to a need to normalize funding for and implementation of mental health supports in the workplace. The community and policy-level strategies described in the literature are strategic, long-term recommendations that likely require time and resources to implement. The established prevalence of mental health outcomes among healthcare and public health workers related to the COVID-19 pandemic response[2,6,7] indicates the need to advocate for such strategies to be considered in order to protect and promote the health of these workforces, and retain human resources in these professions in the long-term.

A majority of the reviewed literature provides evidence and recommendations for action during a pandemic response rather than in a post-pandemic context. However, evidence suggests the psychological impacts of pandemics persist beyond the end of the pandemic, with estimates of impacts lasting up to three years.[5,14] Therefore, workforce mental health and resilience efforts should involve maintaining supports well beyond the end of the COVID-19 pandemic response.[5,14,24,32] Some literature recommends continuing the implementation of systematic processes to monitor staff for mental health risk factors and actively provide supports for a minimum of six months after the emergency response has ended.[32] Considerations should also be made to provide these supports on a more permanent basis, as mental health is increasingly being described as a key component of, rather than separate from, overall health and wellbeing.[37,38]

Limitations

The findings summarized above are strengthened due to the focus on recent review-level literature; however, there are several limitations to consider. This synthesis focused on literature with a primary focus on mental health and did not search for or include literature related to other workforce interventions not directly intended for mental health improvement, but may lead to improvements indirectly (e.g., additional compensation during the pandemic, flexible schedules). The available body of evidence currently consists mostly of weak to moderate quality reviews. Included reviews varied in their methodology, and scoping and narrative reviews were included along with more rigorous systematic reviews. The focus of this synthesis is to examine interventions. However, the first objective of multiple included reviews was to characterize the prevalence of mental health concerns in healthcare workers during pandemics, with intervention recommendations often being secondary objectives and interpreted from prevalence and risk factors implications rather than effectiveness studies. Four reviews included recommendations within the COVID-19 context based on primary studies that were conducted using evidence from previous pandemics.[5,14,27,34]

Also of note is the gap in equity considerations for mental health interventions in the available literature. The increased risk of adverse mental health outcomes for select populations (e.g., women, lower income) is mentioned in relation to the prevalence of mental health concerns among healthcare workers, however, prevalence is not the focus of this synthesis. Overall, the included studies did not examine interventions that aimed to address structural and systemic factors (e.g., racism, sexism, job security) that may be associated with mental health outcomes. The available literature also did not examine equity-related intervention considerations for marginalized groups known to be hardest hit during the COVID-19 pandemic (e.g. Black, Indigenous and other racialized populations), however, these inequities should be considered by those planning to implement workplace mental health supports. Similarly, while closely linked to mental health, substance use was not discussed as an outcome in the main results of the included reviews investigating interventions or strategies to protect or improve mental health.

Several reviews discussed a lack of empirical evaluation of available interventions to support the mental health of healthcare workers during pandemic responses, especially regarding quantitative evidence.[12,20,21,33] Reviews report that heterogeneity of programs and interventions, and a lack of standardized measurement tools make it difficult to systematically determine whether one intervention offers distinct benefits over another. Therefore, in some cases, reviews made recommendations not based on quantitative evidence but on qualitative or descriptive evidence, as well as expert opinion. This is an important limitation of the available evidence, and future research should endeavour to quantitatively examine the impact of interventions to improve mental health and resilience of the healthcare and public health workforce.

Implications for Practice

- Interventions are organized in this synthesis according to socio-ecological level and general theme. In practice, considerations should be made to combine elements from all levels of interventions in a multi-faceted approach, and to continue providing such supports on a long-term basis to ensure mental health and resilience are continually and proactively supported, rather than only in response to crisis situations.

- Individual and team-based interventions such as education and training, specific mental health interventions, and peer and social support may help reduce adverse mental health outcomes. However, individual staff may be hesitant to disclose mental health concerns, and without

broader organizational supports such interventions are limited by individuals deciding to initiate participation in the intervention, to continue the intervention, or to carry forward the concepts learned during the intervention over a period of time.

- Prioritization of the public health workforce's mental health by public health organizations, managers, and leaders may begin with the basics by confirming staff have safe and manageable work environments. Adapting safety needs to public health settings could entail providing adequate PPE, ensuring safe on-site infection control policies and flexible options to work from home. Supporting adequate rest may mean encouragement and reminders to take meal and health breaks, enabling staff to book time off work to rest, accommodating staff to attend to needs such as childcare or caregiving for other dependents, setting reasonable timelines and workloads that do not require staff to regularly work extended hours and providing compensation or flex time options in the event of overtime time work. Adequate food and drink may mean that affordable healthy food options which meet dietary or cultural needs are accessible on-site, and remote workers are encouraged to take meal breaks.

- During the COVID-19 pandemic recovery, some staff may be continuing in COVID-19 roles, where others may be returning to their pre-pandemic roles after months of re-deployment, and certain teams, roles or workplace norms may be permanently changed moving forward. Providing safe and manageable work environments may involve providing adequate and ongoing training, adequate staffing and resources to complete their work, and creating supportive environments in which reasonable time and space is allotted to take breaks, and safety measures are accessible if needed (e.g., PPE).

- Organization-wide mental health supports should be available and accessible to all staff. Adequate resources dedicated to these supports can reduce barriers to implementation and communicate to the workforce that their wellbeing is considered a priority.

- Regular and clear communication from management and leaders minimizes confusion and distress among staff, can bring attention to mental health risk factors, address stigma and inform staff of the supports available.

- Effective leadership should recognize the efforts of the workforce, be visible to and engaged with staff, endeavor to be aware of staffs' concerns and needs, and address those concerns by providing support and resources. Fostering a sense of workplace cohesion should also be encouraged and modelled by those in leadership and management roles.

- Policy-level strategies to support the mental health of healthcare workers should focus on pandemic preparedness policies and occupational health policies to ensure workers' health, safety, and wellbeing are structurally supported. Organizations should ensure that mental health support interventions include components that address stigma associated with seeking support for negative mental health outcomes. At the community-level, any stigma or discrimination against frontline workers involved in the pandemic response should be addressed to further protect psychological wellbeing of the workforce.

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Appendix A: Additional resources

Grey literature resources identified through targeted searching consists of available tools, frameworks or programs to guide healthcare and public health organizations through the planning or implementation of mental health and wellbeing supports for staff. These resources may be useful to consider applying to public health organizations' (e.g., public health agencies) workforce to promote mental health and resilience during post-pandemic recovery. Please see Table 1 for details.

Table 1. Resources to guide organizations, leadership, and managers through the planning of workplace mental health supports and programs

Resource	Description
Centre for Addiction and Mental Health Mental Health Playbook for Business Leaders[39]	Evidence-based workplace recommendations for organizations to improve the mental health of their workforce.
Canadian Mental Health Association Not Myself Today[40]	*Not Myself Today* is a workplace mental health initiative comprised of a toolkit available to download.
Canadian Centre for Occupational Health and Safety (CCOHS) Guarding Minds @ Work[41] Other CCOHS mental health resources[37]	*Guarding Minds @ Work* helps employers identify and measure employee experience with psychosocial factors known to have a powerful impact on organizational health, the health of individual employees, and the financial bottom line. This initiative is hosted by CCOHS. The CCOHS has also made other mental health supports available on their website.
Mental Health Commission of Canada National Standard - Psychological Health and Safety in the Workplace[42] Assembling the Pieces Toolkit[43] Workplace Mental Health: Opening Minds Workplace Mental Health Program[44]	The *National Standard of Canada for Psychological Health and Safety in the Workplace* (the Standard) is designed to guide organizations in promoting mental health and preventing psychological harm at work. *Assembling the Pieces* is a toolkit designed to support organizations working to implement the Standard. *Opening Minds Workplace Mental Health* program is in place to help organizations navigate the development and execution of an effective and sustainable workplace mental health strategy.
Public Service Health and Safety Association Beyond Silence[45]	*Beyond Silence* is a series of resources, customized for healthcare workers designed to promote early intervention and support for the mental health of healthcare workers, and to promote psychological health and safety in healthcare workplaces.
Government of Canada	Government of Canada webpages with a list of tips and resources to support the mental health of employees and teams.

Resource	Description
Mental health and COVID-19 for public servants: Supporting employees and teams[46]	
Sudbury & Districts Public Health Managing through COVID-19: How to support your employees' mental health an employer's guide[47]	Guide and recommendations for employers developed by adapting information from the National Standard for Psychological Health and Safety in the Workplace and the Workplace Strategies for Mental Health website.
World Health Organization Health workforce policy and management in the context of the COVID-19 pandemic response[48]	This guide consolidates COVID-19 guidance for human resources for health managers and policy-makers at national, subnational and facility levels to design, manage and preserve the workforce necessary to manage the COVID-19 pandemic and maintain essential health services. The guide identifies recommendations to protect, support and empower health workers at individual, management, organizational and system levels.
British Psychological Society (United Kingdom) The psychological needs of healthcare staff as a result of the Coronavirus pandemic[49]	Guide for leaders and managers of healthcare services to support the consideration of the wellbeing needs of all healthcare staff (clinical and non-clinical) as a result of the COVID-19 pandemic. The guide offers practical recommendations for how to respond at individual, management and organisational level involving the appropriate utilisation of expertise within their practitioner psychologist and mental health professionals and anticipates the psychological reactions over time, and what people may need to recovery psychologically from the pandemic response.
The King's Fund (United Kingdom) The road to renewal: Five priorities for health and care[50]	The five priorities provide a framework to help guide the approach to renewal across health and care. The framework draws on existing evidence and experience, as well as lessons from the pandemic to set out the actions that should now be taken.
The King's Fund (United Kingdom) Responding to stress experienced by hospital staff working with COVID-19: Guidance for planning early interventions[51]	Framework to guide planned responses to stress among staff to foster resilience, reduce burnout, and reduce the risk of post-traumatic stress disorder.
National Health Service (United Kingdom) Managing the wellbeing of social care staff during the COVID-19 pandemic: Employers' guide[52]	This guide helps employers and managers to think about the wellbeing of their staff and fulfil their duty of care for their employees. Wellbeing research suggests that good organisational leadership and a supportive work culture can have a positive

Resource	Description
	impact on the psychological wellbeing of these staff before, during and after the crisis.
National Health Service Northern England (United Kingdom) Staff wellbeing during the COVID-19 pandemic: Guidance for organisations[53]	This guidance and associated framework for recommendations is based on evidence and aims to help organizations to promote the psychological health of their workforce.
Mind Charity (United Kingdom) Supporting the mental health of NHS staff: The role of NHS leaders in reducing mental health stigma and creating mentally healthy cultures[54]	This resource aims to provide practical advice and tips to help NHS leaders and line managers reduce mental health stigma, create mentally healthy cultures and support better mental health. The resource created information about the role of champions and peer supporters, given the high level of informal support given by peers across the NHS to support the mental health and wellbeing of their colleagues.
Mind Charity (United Kingdom) Mental Health at Work website[55]	This site brings together resources, toolkits, blogs and case studies to support organizations with the mental health of their workforce.
Local Government Association (United Kingdom) Wellbeing for frontline staff[56]	This site provides recommendations for employers to understand how they can support the psychological wellbeing of staff and protect the mental health of frontline staff during the COVID-19 pandemic.
Department of Health and Social Care (United Kingdom) Guidance: Health and wellbeing of the adult social care workforce[57]	This guidance includes tips, advice and toolkits that employers and managers can use to help build the resilience of their team and address any concerns their staff may have. There is also a section that provides guidance on how all those working in social care can manage their personal mental health in the current circumstances.

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