



Rosemary Bryant AO
Research Centre



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Registered Nurses'
Association of Ontario

L'Association des
infirmières et infirmiers
autorisés de l'Ontario

COVID-19 and workforce wellbeing: A survey of the Canadian nursing workforce

May 2023

Sharplin, G

Jarvi, K

Adelson, P

Peters, MDJ

Corsini, N

Eckert, M

Stilwell, B

Moreno-Casbas, T

Grinspun, D

RBRC founding partners



Rosemary
Bryant
Foundation



**University of
South Australia**

The Rosemary Bryant AO Research Centre

(the Centre) is a partnership between the University of South Australia, the Australian Nursing and Midwifery Federation (SA Branch), and the Rosemary Bryant Foundation. The Centre aims to strengthen the role of the nursing and midwifery profession across the health system through the development of a research-driven, evidence-based platform of healthcare. To achieve this, the Centre has developed a comprehensive research program focused on advancing the discipline of nursing and midwifery and patient care in the domains of population and public health, workforce reform, safety and quality, clinical practice, patient outcomes, and integration into education.

COVID-19 and workforce wellbeing: A survey of the Canadian nursing workforce

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Acknowledgements of country

Australia

We acknowledge the Traditional Custodians of the lands in Australia on which we work and live, and recognise their continuing connection to land, water, and community. We pay our respects to Elders past, present, and emerging. We acknowledge the stories, traditions, and living cultures of Aboriginal and Torres Strait Islander peoples on this land and commit to building a brighter future together.

Canada

Canada is situated on the traditional and unceded territory of many indigenous nations. This land remains the home to many First Nations, Inuit and Métis peoples from across Turtle Island and we are grateful to have the opportunity to work on this territory.

“In the face of inordinate stress, with high work demands and little support from employers or government, nurses have been tested like never before. And, yet, they have continued – nursing through this crisis to give safe and compassionate care to patients, residents and clients.”

(Registered Nurses’ Association of Ontario)

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Executive summary

Background

The Registered Nurses' Association of Ontario was first established in 1925. It is a voluntary professional association that advocates on behalf of the nursing profession for healthy public policy at multiple levels of government and healthcare. It leads a range of best practice initiatives to foster excellence in nursing practice and empowers nurses to actively influence and shape decisions that affect the profession and the public we serve. During the COVID-19 pandemic, the RNAO was cognisant of the immense strain placed on the nursing workforce, both in Ontario and across Canada. As a mission-driven organisation, the RNAO recognised the need to generate empirical evidence to effectively advocate on behalf of the nursing profession for improvements to their working conditions.

To support this endeavour, in 2021, the Rosemary Bryant AO Research Centre (RBRC) partnered with the Registered Nurses' Association of Ontario (RNAO) to conduct a survey of nurses across Ontario. The RNAO also reached out to similar organisations across Canada to promote the survey more broadly. The survey was promoted through a number of channels including the RNAO website, via the CEO's blog, and on social media platforms.

The purpose of the survey was to describe and assess what effects the international outbreak of COVID-19 pandemic has had on the Canadian, and in particular, the Ontarian workforce.

The objectives of the research were to:

- i) undertake a cross-sectional assessment of the impact of COVID-19 on the Canadian nursing profession;
- ii) assess indices of occupational wellbeing, including stress, anxiety, and burnout in nurses, across different work settings;
- iii) determine contributory factors that are impacting occupational wellbeing;
- iv) identify opportunities to improve the Canadian healthcare workforce's preparedness for significant health crises such as COVID-19 in the future, and how Canadian nursing and healthcare bodies can lead or support here; and
- v) Identify the potential for losses of nurses from the health system in the wake of the pandemic and identify ways of mitigating those losses and ways of attracting individuals to join the Canadian nursing workforce.

Method

An online, anonymous, cross-sectional survey ran over a 10-week period from 21 May to 31 July 2021. There were approximately 287 questions in the survey. The survey was developed by RBRC with input from RNAO to ensure relevance and generalisability to the Canadian context. Promotion of the survey was primarily through the RNAO communication channels including its website, social

media channels and mass emails to members. Other organisations including ONA, CFNU and Wounds Canada also supported the distribution of the survey across Canada.

The survey consisted of two parts:

- **Survey Part I** focused on demographic and COVID-19 factors, including: workplace preparedness, personal and family concerns, workplace care for COVID-19 patients, workplace changes due to COVID-19, testing and missed work, PPE issues, and community support. Questions included adaptations of other international health workforce COVID-19 survey questions for benchmarking.
- **Survey Part II** assessed indices and domains of the workplace and occupational wellbeing, including: the nursing practice environment, psychosocial workplace conditions, job satisfaction, resilience, burnout, and mental health. Original and modified versions of validated instruments were used, including: the Practice Environment Scale – Nursing Work Index (3336-NWI), Copenhagen Psychosocial Questionnaire Version 3 (COPSOQ-III), McCloskey/Mueller Satisfaction Scale (MMSS), Brief Resilience Scale (BRS), Depression Anxiety Stress Scales (DASS-21), Oldenburg Burnout Inventory (OLBI) and the Utrecht Work Engagement Scale (UWES). It also assessed the potential for departure from nursing and factors that could mitigate those departures.

Data analyses in this report are descriptive and reported for the overall sample, as well as by four major workplace categories: hospitals, residential long-term care / retirement facilities, primary/community health, and “other” workplaces.

Results

In total, 6,158 nurses logged into the survey. After data cleaning 5,200 respondents were included in data analysis and reporting. There was periodic dropout across the survey and not all questions were applicable to all respondents; hence, data reported below are based on valid percentages (i.e., missing or non-valid data are excluded from denominators).

Part I: Demographic and COVID-19 factors

Respondents and occupational demographics

The majority of respondents were registered nurses, female and born in Canada. They worked full time in teaching hospitals settings in Ontario and were very experienced nurses.

- The largest proportion of responses were from registered nurses (87.9%), followed by Registered / Licensed Practical Nurses (5.0%), and Nurse practitioner (3.8%), a nurse in the non-practicing class (2%), a nurse in the temporary class and registered psychiatric nurse (0.5%).

- The majority of respondents were female (92.8%) with a mean age of 44.4 years.
- Just over half were married (52.4%) followed by single (24.9%), common law union (11.6%) or cohabitating (3.9%).
- Most respondents were born in Canada (79.7%) followed by the Philippines (3.2%) and the United Kingdom (UK; 2.2%).
- Most respondents were permanent full-time (54.5%), followed by permanent part-time (21.0%), not working (5.8%) and casual (4.5%).
- Most respondents (59.5%) worked entirely as a staff nurse.
- Respondents worked across a variety of facilities/organisations; the largest proportion being public or private hospitals (50.2%).
- For comparative purposes work setting was reduced to four groups: hospitals (including outpatients; 51.1%), primary healthcare (PHC) (15.8%) long-term / retirement care (10.4%), and other organisations (22.8%; e.g., defence, university, health departments, non-government organisations).
- Respondents mainly worked in Ontario (92.7%) followed by Manitoba (2.1%) and Nova Scotia (1.5%). All other provinces and territories had <1% of the total responses.
- Over one-quarter of respondents ($n = 1362$, 28.4%) reported having 30 years or more experience working in healthcare
- Almost one-third of respondents (30.9%) reported having childcare responsibilities at home and one-quarter of respondents ($n = 1239$, 24%) reported having caregiver responsibilities other than children at home.
- Four in five respondents (79.8%) reported their caregiving responsibilities had moderately or significantly increased in response to COVID-19.

Healthcare leadership and policy

Findings related to healthcare leadership and policy suggested that the quality of the health system response to the COVID-19 threat was varied and that more could have been done to address key resourcing issues like staffing levels and skill mix to strengthen the support functions required to protect the safety of staff and address issues of violence and abuse towards staff.

- Across all respondents, 48.3% reported their workplace had a plan or protocol in place *when the pandemic was declared* to respond to those with known or suspected COVID-19 cases. This proportion had increased to 93.4% at the time of the survey.
- When rating organisational preparedness for COVID-19 with respect to policies and procedures, most (73.2%) respondents rated screening of staff for risk factors/symptoms, cleaning protocols of isolation rooms (75.5%), access to other equipment (67.5%), communication (67.3%) and responding to an outbreak (66.5%) as good to excellent.

- Areas that were rated very poor, poor or fair by at least 40% of staff were: access to alternative accommodation (68.9%), ability to deploy more staff if required (62.6%), debriefing processes (61.0%), access to workplace psychological or mental health support (60.1%), preventing abuse of staff (58.5%), support for new graduates (45.1%), isolation of vulnerable patients/clients (42.8%), and social distancing (42.6%).
- Eight in ten (79.9%) had received infection prevention and control training.
- Nearly half (44.9%) of respondents were moderately or extremely confident to practice safely as a result of the training they had received. Yet, 11.6% of respondents reported being either not at all or somewhat confident.
- Most respondents (87.6%) reported their workplace had provided care to one or more patients/clients with *suspected* COVID-19 with slightly less (82.0%) reported having cared for cases with *confirmed* COVID-19.
- For those whose workplace had cared for one or more patients/clients with suspected or confirmed cases of COVID-19, 41.7% ($n = 984$) of respondents reported that their workplace had cared for 1-50 cases since the start of the pandemic.
- Just over one-third of respondents (36.3%) indicated that their workplace had assigned or asked for dedicated staff to care for COVID-19 patients.
- The settings most frequently cited in which care was provided to suspected or confirmed COVID-19 cases were hospital ICUs (27.6%), emergency departments (18.1%), hospital specialty units (12.8%), and long term care homes (11.5%).
- More than 62% of respondents rated the COVID-19 information provided by their workplace as good, very good or excellent with respect to being timely, trustworthy, clearly written, comprehensive and consistent with other sources (range: 62.3% - 66.9%).
- The most commonly selected sources were national government ministries of health (77.1%) and Health Canada (58.2%) and the RNAO (54.8%).
- Over half of respondents were moderately or extremely concerned about having adequate staff (69.1%) and skills mix (62.5%), managing their workload (55.9%), and the welfare of their colleagues (52.0%).
- Respondents were generally not concerned or only slightly concerned about having access to hand sanitizer at work (82.3%) or having supplies to disinfect themselves before going home (73.5%).
- Most respondents (69.9%) experienced or felt community support for the work they do.
- Half of respondents (50.5%) had experienced abuse or been threatened by members of the public or patients at work.
- Nearly one in four (23.0%) had experienced abuse or felt threatened by members of the public in settings outside of work.
- The mean number of: hours worked per week was 35.9 ($SD = 12.0$); paid overtime per week was 3.29 ($SD = 7.02$); and unpaid overtime per week was 3.66 ($SD = 5.56$).
- Few (12.1%) reported working double-shifts in the past month. Of those who did report working a double-shift ($n = 340$), the mean number of double shifts was 2.95 ($SD = 2.92$) per month.
- More than eight in ten (83.2%) of respondents felt their workload had slightly, moderately or significantly increased since the pandemic. Contrastingly, 7.2% of respondents reported their work had slightly, moderately or significantly decreased.
- Near half (47.9%) of respondents reported working more than they would like, and a further 45.9% thought the amount they worked was about right.

- Half (50.2%) would like their hours to remain about the same after the pandemic, while a further 43.8% would like their hours to decrease after the pandemic.
- Nearly half (47.6%) of all respondents reported that their organisation had either significantly, moderately or slightly increased the number of staff rostered onto shifts to cope with extra demand.
- Approximately one third (37.3%) reported recruiting student nurses to support the regular workforce to cope with demand.
- Nearly six in ten (57.9%) respondents indicated that their organisation had limited staff vacations / time away from work to assist with demand.
- Just over one third (35.4%) of respondents reported their work schedule has been unaffected, and just under half reported an increase in paid (26.4%) or unpaid (15.1%) hours.
- For respondents whose shift hours had been affected (hours either increased or decreased), the most frequently cited reasons were lack of staff (72.2%), increased patient numbers (55.2%), and changes to / closure of specific services (36.3%).
- A total of 1,093 respondents indicated they were employed at more than one workplace at the beginning of the pandemic. Of those respondents, approximately one-third (34.3%) were asked to give up working at one of the places.
- Few respondents (12.5%) continued to work at multiple workplaces and one in five (19.6%) received advice on their rights in those situations.

The nursing practice environment and its impact

While the environment was generally considered one that a nursing philosophy of care was supported, the pandemic created a new risk to both staff and to patients whereby it was not uncommon for nurses to be asked to work outside of scope of practice and where this did occur, it was not always supported with education or training.

- On average, there was agreement that nursing philosophy for quality care, praise and supervisory support and nursing leadership were present within the practice environment, but there was neither agreement nor disagreement that resource and staffing adequacy were present in the workplace.
- Respondents reported that the working environment was often fast paced and cognitively demanding, and sometimes emotional demanding and quantitatively demanding.
- There was largely role clarity (i.e., work objectives, direction and expectations were clear), but also some role conflict (i.e., contradictory demands or performing tasks that ought to have been performed differently). Work-life conflict was also reported some of the time.

- Those working in residential long-term care / retirement facilities reported the highest levels of workplace demand, emotional demand, work pace and cognitive demand. Those working in hospitals reported highest level of role clarity and role conflict.
- Approximately one-quarter (27.1%) of respondents reported they were asked to work outside of their scope of practice. Of those that were asked to work outside of their scope of practice, two-thirds (67.9%) did not receive appropriate education or training.
- Overall, 14.9% of respondents were redeployed to a different geographic area, hospital, or speciality of work because of COVID-19. The most frequently reported location to be redeployed was intensive care (119.7%), long-term care / retirement (15.7%) and COVID-19 screening or drive-through clinics (13.9%).
- Nearly half (47.9%) had not received education or training as part of their redeployment.
- At the time of the survey (21.9%) of respondents had been tested for COVID-19 in the past four weeks. The mean number of times tested was 4.76 ($SD = 4.65$).
- Approximately 10.2% of respondents had tested positive for COVID-19 in the past four weeks. Approximately half (48.6%) believe this was due to workplace exposure.
- Most respondents (93.7%) had been vaccinated at the time of completing the survey.
- More than half (52.7%) reported having to miss work due to COVID-19. The most common reasons for missing work were: showing symptoms of COVID-19 (50.0%) or showing symptoms of COVID-19 (24.7%).
- Where leave was taken, it was usually covered by the workplace (51.4%), leave without pay (30.5%) or personal/sick leave (17.9%).
- Respondents expressed, on average, moderate satisfaction with work and scheduling flexibility and collegial relationships, and moderate dissatisfaction with extrinsic rewards, and leadership and career opportunities.
- Work engagement measures showed that respondents felt dedication and absorbed with their role often, and vigour sometimes. Those working in hospital had lower levels of dedication, absorption, and vigour, when compared to other sectors.
- Burnout subscale scores indicated high levels of exhaustion and high levels of disengagement. Respondents working in hospitals long-term/retirement care had higher levels of burnout compared with those working in primary care and other work settings.
- More than two-thirds (68.6%) planned to leave within the next 5 years. Of these, more than one quarter (29.4%) plan to retire. Few respondents (12.6%) planned to leave the profession to work in another field.
- Respondents were asked what would encourage them to stay in nursing. The most frequently selected option were related to improving the working conditions for nurses including; better workplace supports (73.2%), reduced workload (67.9%), and ability to adjust work schedule (62.5%).

While most nurses reported having the right type, size and a sufficient amount of PPE at the time of the survey, one-third had reported PPE concerns to their employer and 40% of workplaces did not have a policy for breaks while working in full PPE.

- At the time of the survey, most respondents reported that they often or always had the right types (90.7%), the right size (87.7%) and a sufficient amount (86.1%) of PPE.
- Overall, 21.6% of respondents reported they had not had to reuse any single-use, disposable PPE. This varied somewhat by main workplace, with hospital workers more likely than other sectors to have reused single-use PPE.
- Of those who reported re-using single-use PPE, the most frequently reused single-use items reported were face shields (60.8%), masks (56.1%), and glasses/goggles (49.4%).
- Close to a third (32.3%) indicated that they had reported PPE concerns to their employer. The majority (58.5%) of respondents agreed or strongly agreed that they were supported by their workplace regarding PPE concerns and requirements.
- Four in ten people (41.6%) reported that their workplace did not have a policy for breaks while working in full PPE, over one-third reported their workplace had a policy (37.7%) and one-quarter (25.6%) did not know.

Nurse wellbeing and access to support

Mental health declined during the pandemic with approximately one-third experiencing some form of depression, anxiety, or stress. Nurses were most concerned with keeping their family and people they lived with safe.

- Nearly 4 in 10 (38.9%) of respondents reported that at the beginning of the pandemic they were not at all or only slightly concerned about risks to their *physical health* due to their work role and 44.5% reported they were moderately or extremely concerned.
- Physical health perceptions improved across the pandemic; with more than half (55.6%) of respondents reported that at the time of completing the survey they were not at all or only slightly concerned about risks to their *physical health* due to their work role and 22.4% reported they were moderately or extremely concerned.
- Mental health perceptions due to their work role and COVID-19 deteriorated across the pandemic time-period. Approximately half (54.9%) of respondents reported that at the beginning of the pandemic that they were not at all or only slightly concerned about risks to mental health. This had dropped to 35.9% at the time of completing the survey. Conversely 29.0% of respondents reported being moderately or extremely concerned at the beginning of the pandemic, which had increased to 42.8% at the time of completing the survey.
- Over half of respondents (54.2%) were moderately or extremely concerned with keeping their family or the people they lived with safe. Other personal concerns that were of moderate or extreme concern were their psychological wellbeing (51.8%), and risk to vulnerable family members (49.3%).
- Since the pandemic, most nurses (75.0%) did not choose to isolate from those they lived with. Of those who did, the majority isolated at their own residence (89.1%).

- Respondents reported an average level of resilience. Resilience levels were similar across all sectors.
- The mean respondents' symptoms for depression, anxiety and stress were in the normal range, however all data were heavily skewed. Analysis of scores based on cut-offs showed that 33.1%, 36.1% and 28.5% had moderate, severe or extremely severe symptoms of depression, anxiety and stress respectively.
- Respondents who were moderately or extremely concerned about staffing levels, skill mix, and workload had significantly higher indicators for exhaustion, disengagement, depression, anxiety and stress, compared with those who had a lower level of concern for these factors.
- The proportion of respondents that had sought mental health or wellbeing support from external providers was 29.0%. The most frequently support services accessed were their primary care provider (34.0%) or employee assistance programs (27.5%).

Considerations for policy, practice, support and research

Based on the findings of this research, the following considerations are made to advance policy, practice, support and future research direction to address the health, wellbeing, and safety of the nursing workforce. These considerations are primarily focused on the leadership, management and coordination, safety, and support and wellbeing of frontline staff. While they have been derived at a time of significant health system challenge, they can also be extended to health system improvement more broadly. Recognising and committing to the resources required to maintain a thriving working environment in healthcare will lead to better outcomes for all. Recommendations for future areas of strategic research are also identified.

Healthcare policy and leadership

1. **Leadership:** Empowering strong nursing leadership in healthcare settings from mid-level clinicians through to the executive level to ensure nurses and their colleagues have a strong voice regarding current challenges and suggestions for improvements to policy and practice of organisations.
2. **Staffing and skill mix:** Achieving both safe staffing and safe skill-mix is essential to respond to post-pandemic needs and future emergencies. This necessitates a comprehensive recruitment and retention strategy to achieve and maintain safe staffing and skill mix.
3. **Risk mitigation:** Learn from the risks identified within the first few weeks of the pandemic to secure a ready supply of basic hygiene and safety equipment designed to protect the health of staff (e.g., PPE), with supply chain logistics and access processes to minimize risk during future pandemic events.
4. **Workforce coordination:** The deployment of staff across the healthcare sector should be considered within the context of minimizing multi-site placements that result in increased risk and exposure for the clinician and community.

The practice and its impact

5. **Education:** Provide standardised, consistent messaging, education and training regarding PPE use, donning, wearing, and doffing that is tailored to the working environment.
6. **Worker safety:** Develop consistent, contemporary policy related to PPE, including breaks from long hours of wearing PPE and long-term use of PPE.
7. **System design:** Design effective systems for the rapid deployment of staff across the healthcare system. Key considerations are to identify and address system or industrial barriers that may hinder movement, flexibility, and protection of workers during a pandemic or other prolonged situations.
8. **Communication:** Provision of consistent, evidence-informed information through trusted communication channels and to relevant staff to ensure accuracy of information and direction.
9. **Prioritise safety:** Active engagement from healthcare administration to ensure the health, wellbeing and safety of staff is prioritised as a business objective.

Wellbeing access and support

10. **Evidence-based support:** Adoption of evidence-based programs designed to provide structured, tailored and meaningful support, and that actively engage staff, especially during times of significant disruption and/or significant trauma. These supports need to be targeted at the most salient risk factors for poor mental health and employee burnout.
11. **Wellbeing monitoring systems:** Systems established to periodically monitor occupational health and wellbeing are adopted as part of business activity reporting, and that include both predictors and performance and organisational risk outcomes of wellbeing. This is to be considered as a standardised approach to the health and wellbeing of staff, pre, during, and post management of a pandemic or significant disruption to the health care environment to monitor impact and staff sustainability.

Strategic research

12. **Longitudinal research:** Large, longitudinal research studies are undertaken (e.g., cohort studies) that apply a theory-guided approach to study the interaction between the health system and the wellbeing of its workforce.
 13. **Cross-sectional monitoring:** Undertake a repeat concise workforce and wellbeing survey biennially. Comparators can be considered both at a national level and with international data.
 14. **Policy research:** a structured program of policy-focused research targeted at the Canadian health sector environment to address current challenges related to workforce sustainability and wellbeing.
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Conclusion

The *Canadian version of the RBRC's COVID-19 and Nursing Workforce Wellbeing Survey* has provided the first indication of challenges experienced by the nursing profession in Canada over the first 18 months of the pandemic. It is anticipated that this report will increase understanding of the impact of the COVID-19 pandemic on the nursing workforce in Canada and in particular in Ontario.

The survey identified a relatively robust, resilient, and dedicated workforce. However, the mental health of nurses appears to have deteriorated over the course of the pandemic. There were concerns regarding: the increased exposure risk they are placing their families and loved ones in by working in healthcare; the health and wellbeing of their colleagues; lack of staffing and poor skills mix; and managing the overall workload.

Nearly all respondents were aware of a COVID-19 policy at their workplace, but some concerning practices where a stronger policy would further mitigate personal risk were identified. For example, some respondents reported being asked to work out of scope, and not receiving training during these times. Others reported an absence of policy for breaks when working in full PPE or respirator fit checking. Of concern, there were reported incidences of threats or abuse by members of the public. It is vital that employers continue to ensure the safety and wellbeing of the nursing workforce by improving plans, policies, and procedures for major health crises, providing an abuse-free working environment, and continuing to provide appropriate and adequate PPE. If necessary, there should be a policy focus on meeting safe staffing levels. This will require significant, long-term investment and commitment from government and the healthcare sector, given the shortfall of nurses, globally.

The survey has also provided an opportunity to establish a baseline assessment of the wellbeing of this key workforce. Alongside other, similar surveys conducted in Australia in 2020 and with the Nursing Now campaign in 2021, it has suggested that there is a near global invariance that characterises the working experience of a nurse with respect to workforce demand, resources and wellbeing aspects. The profession is characterised by high levels of work pace, cognitive and emotional demand, and challenges with accessing resources, which can all lead to poorer occupational performance and impact on health and wellbeing. Resource and staffing adequacy were consistently rated as the top three concerns and were always very poorly rated. Further, there was general dissatisfaction with extrinsic rewards, leadership and career opportunities.

It is imperative that employers of nurses actively engage with their workforce, especially during such extreme events, by seeking their feedback and concerns, and working to support and maintain their safety and wellbeing as a priority, as it has a direct relationship with the health of the community and management of our global health security. To this end, safe staffing should be a priority for health services and policy makers.

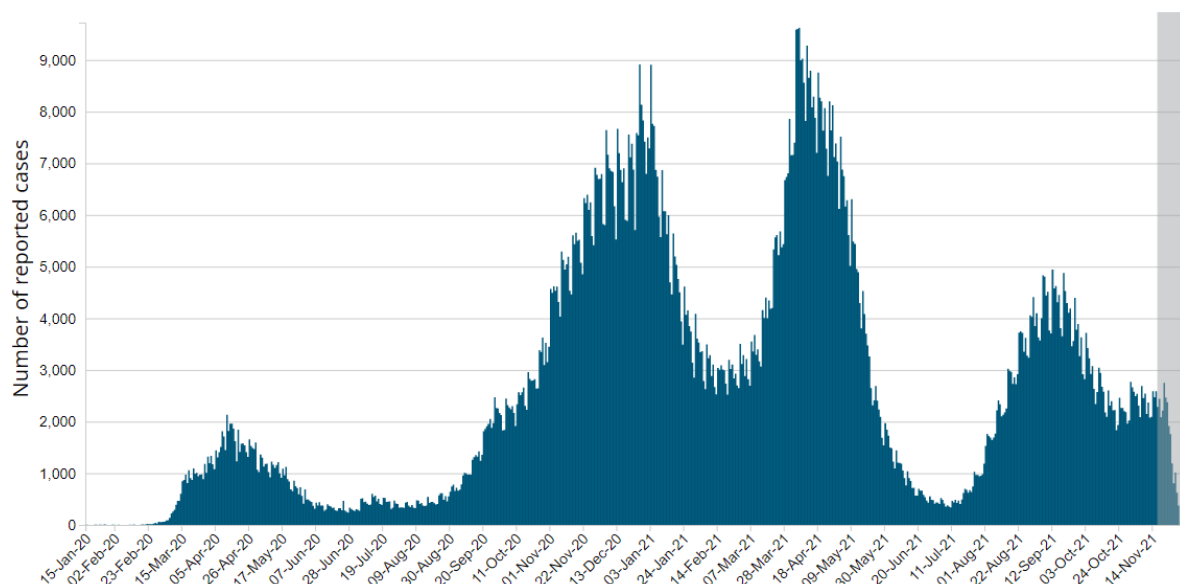
It is anticipated that the *RNAO COVID-19 and Nursing Workforce Wellbeing Survey* will contribute data to inform evidence-based policy and practice change when Governments and healthcare providers are considering strategic changes to their business. Ensuring the safety and wellbeing of healthcare workers will increase the stability of staff who are critical during major health crises such as COVID-19.

Background

COVID-19 and the Canadian context

In 2020, the International Year of the Nurse and Midwife, healthcare professionals across the globe have faced unprecedented challenges with the COVID-19 pandemic. COVID-19 has spread to every inhabited continent and was declared a pandemic on 11 March 2020 by the World Health Organization (WHO).(1) As the virus continues to evolve, new variants such as the Delta and Omicron variant have emerged with increased transmissibility and have become the dominant strains worldwide.

Multiple waves of COVID-19 have been experienced across the world. In the week of 9 May 2021, when this study commenced, the WHO reported 5.5 million cases and over 90,000 deaths with case and death incidence at the highest level since the beginning of the pandemic (Figure 1). In Canada, multiple waves have been observed (Figure 1). At the time of this survey (May-July 2021), Canada was going through a large wave leading into their summer months.



The impact of COVID-19 on Healthcare workers

The impact of the COVID-19 outbreak has been wide-ranging beyond dealing with immediate cases. In some areas of the world, health services have been overrun with new cases; putting staff and other patients at significant risk of contracting the virus (3, 4).

Healthcare workers, and nurses in particular, are at increased risk of COVID-19 infection because of increased patient contact time and close contact with people who have contracted COVID-19.(5) The World Health Organisation (WHO) estimated that between 80,000 to 180,000 health care workers died from COVID-19 in the period between January 2020 to May 2021 (6).

Healthcare workers in clinical settings are confronted not only with their own personal safety, but are also working in stressful environments. They are exposed to increased patient loads, uncertainty around disease outcomes, fast changing organizational policies and practices and facing other significant challenges and stressors that impact their physical, mental, and emotional safety, health, and wellbeing (7-10). In addition, long shifts, wearing PPE, risk of infection, community aggression and abuse, concerns for the safety of loved ones and patients, and lack of access to resources and support pose a heavy burden for healthcare workers.

Moreover, for nurses, alongside other healthcare workers, who were already experiencing workplace burnout, the pandemic has likely contributed additional stress and impacted physical and mental wellbeing, on-the-job performance, the immediate working environment, and concern for the health and safety of their own family and friends when they leave work. Research is needed to gain a deeper understand of nursing, and personal care worker experiences during the COVID-19 outbreak.

Research objectives

The Rosemary Bryant AO Research Centre (RBRC) undertook a survey of the Canadian nursing workforce, in partnership with the Registered Nurses' Association of Ontario. The survey was an adapted version of a survey previously run in Australia (11). The purpose of the survey was to identify and assess what effects the COVID-19 pandemic has had on the nursing profession in Canada, including impact on their wellbeing. The objectives of the survey were to:

- i)** undertake a cross-sectional assessment of the impact of COVID-19 on the Canadian nursing profession;
- ii)** assess indices of occupational wellbeing, including stress, anxiety, and burnout in nurses, across different work settings;
- iii)** determine contributory factors that are impacting occupational wellbeing;
- iv)** identify opportunities to improve the Canadian healthcare workforce's preparedness for significant health crises such as COVID-19 in the future, and how Canadian nursing and healthcare bodies can lead or support here; and
- v)** Identify the potential for losses of nurses from the health system in the wake of the pandemic and identify ways of mitigating those losses and ways of attracting individuals to join the Canadian nursing workforce.

Methodology in brief

An online, anonymous, cross-sectional survey ran over a 10-week period from 21 May to 31 July 2021. There were approximately 287 questions in the survey. The commencement of the survey coincided with the peak of a wave during May 2021. The survey was developed by RBRC with input from RNAO to ensure relevance and generalisability to the Canadian context. Promotion of the survey was primarily through the RNAO communication channels including its website, social media channels and mass emails to members. Other organisations including ONA, CFNU and Wounds Canada also supported the distribution of the survey across Canada.

The survey was divided into two parts:

- **Part I** focused on demographic and COVID-19 factors, including: workplace preparedness, personal and family concerns, workplace care for COVID-19 patients, workplace changes due to COVID-19, testing and missed work, personal protective equipment (PPE) issues, and community support. Questions included adaptations of international health workforce COVID-19 questions for benchmarking.
- **Part II** assessed indices and domains of the workplace and occupational wellbeing, including: the nursing practice environment, psychosocial workplace conditions, job satisfaction, resilience, burnout, and mental health. Original and modified versions of validated instruments were used, including: the Practice Environment Scale – Nursing Work Index (PES-NWI), Copenhagen Psychosocial Questionnaire Version 3 (COPSOQ-III), McCloskey/Mueller Satisfaction Scale (MMSS), Brief Resilience Scale (BRS), Depression Anxiety Stress Scales (DASS-21), and the Oldenburg Burnout Inventory (OLBI).

Data analyses in this report are descriptive and reported for the overall sample, as well as by four major workplace categories: hospitals, long-term / residential care facilities, primary care, and “other” workplaces.

After analyses, results were reported under the following areas:

- Respondents and occupational demographics
- Healthcare leadership and policy
- The nursing practice environment and its impact
- Nurse wellbeing and access to support
- Comparison with other RBRC COVID-19 and workforce wellbeing survey.

A detailed description of the methodology for the study is provided in Appendix A.

Results

Respondents

The Canadian COVID-19 survey ran from 20 May to 31 July 2021 with 6,158 nurses from across Canada opening the survey. Of those, 5,261 consented to participate and responded to at least one question. A further 61 were removed due to only answering a very small number of questions (6 out of 26 demographic and occupational information from early in the survey). This left a total of 5,200 in the final survey.

Response rates to questions varied with a downward trend as the survey progressed; the number of responses to the last prompted question was 2,824, representing a 46% decrease in responses across the survey. The number of responses to each question (or average number over a series) is reflected in the reporting of results.

Primary job classification

Respondents are reported by their job classification as identified in Table 1. All respondents had a nursing qualification and the majority were registered nurses. Only a few were registered psychiatric nurses ($n = 26$). Hence, for the purposes of this report it is important to note that subsequent results largely reflect the experiences of the nursing profession. Approximately two-thirds of participants (63.8%) identified as being a member of a Union.

Table 1. Main job classification of respondents

Classification	Frequency (<i>n</i>)	Percent (%)
Registered Nurse	4213	87.9
Registered Practical Nurse / Licensed Practical Nurse	241	5.0
Nurse Practitioner	183	3.8
A nurse in the Non-Practising Class	95	2.0
A nurse in the Temporary class	37	0.8
Registered Psychiatric Nurse	26	0.5
Total	4795	100

Demographics

Age

The mean age of respondents was 44.4 years ($SD = 14.2$ years). The median age of respondents was 45 years (Interquartile Range [IQR] = 32 – 56 years).

Gender

Respondents largely identified as female ($n = 4,807$, 92.8%), followed by male ($n = 305$, 5.9%), and gender non-binary ($n = 27$, 0.5%). Thirty-nine respondents preferred not to disclose their gender.

Marital status

Approximately two-thirds (67.9%) of respondents indicated they were in a relationship (Figure 2). Most respondents reported being married ($n = 2,699$), with the remaining respondents reporting being single ($n = 1,284$), in a common law union/ de facto relationship ($n = 599$), or cohabiting ($n = 200$). A small number of people ($n = 65$) identified as widowed.

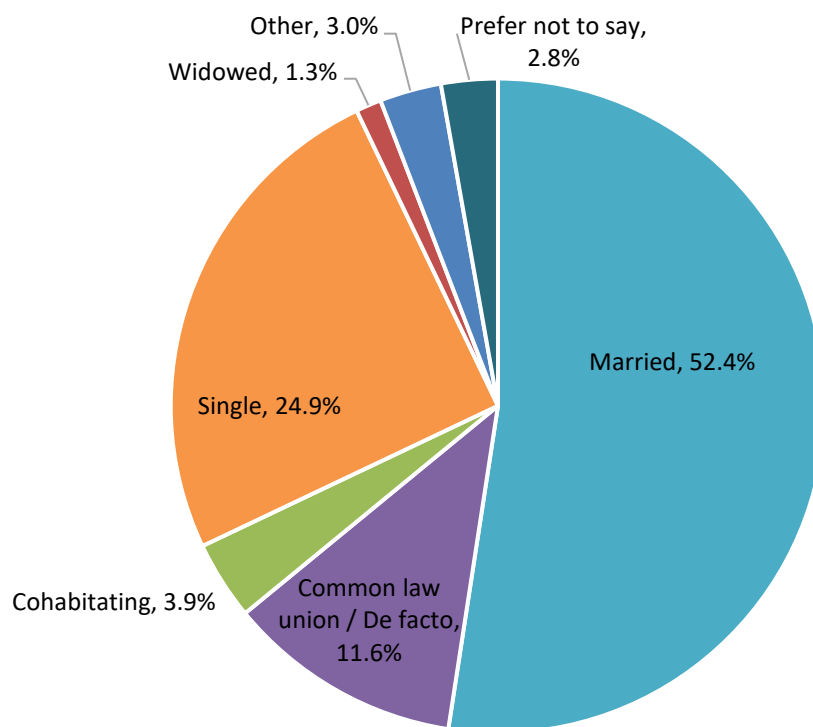


Figure 2. Marital status of respondents ($n = 5148$).

Country of birth

The largest proportion of respondents was born in Canada, followed by the Philippines and the UK (Table 1). There was also a small proportion (7.1%) who indicated being born outside of the listed country options.

Table 1. Country of birth reported by respondents

Country of birth	<i>n</i>	%
Canada	4072	79.7
Philippines	161	3.2
UK	110	2.2
Prefer not to say	98	1.9
India	96	1.9
USA	66	1.3
China	29	0.6
Hong Kong	28	0.5
Iran	27	0.5
Nigeria	25	0.5
Poland	23	0.5
Pakistan	7	0.1
France	3	0.1
Other	365	7.1
Total	11682	100

Note. *n* = number of respondents, % = percentage of respondents.

Province or Territory of birth

The largest proportion of Canadian-born respondents were born in Ontario, followed by Quebec and Nova Scotia (Table 2). A small proportion (7.0%) preferred not to disclose their Province or Territory of birth. It is important to note that given this distribution, the findings may largely reflect the experiences of nurses in Ontario.

Table 2. Province or Territory of birth reported by respondents

Province or Territory of birth	<i>n</i>	%
Ontario	3613	79.2
Quebec	122	2.7
Nova Scotia	119	2.6
Manitoba	117	2.6
Alberta	68	1.5
Newfoundland and Labrador	66	1.4
British Columbia	58	1.3
New Brunswick	31	0.7
Saskatchewan	30	0.7
Prince Edward Island	13	0.3
Northwest Territories	2	0.0
Nunavut	1	0.0
Yukon	1	0.0
Prefer not to say	318	7.0
Total	4559	100

Ethnicity

Respondents were asked to indicate their ethnicity (Table 3). The largest proportion of respondents (39.6%) reported being of Canadian ethnicity, followed by British (11.6%). A small proportion (7.7%) preferred not to disclose their ethnicity. In total, over 20 ethnicities were reported.

Respondents were also asked to indicate if they identified as First Nations, Inuit or Matis. Of those who responded ($n = 4993$), the majority of respondents did not (95.8%) or preferred not to say (1.4%). Some respondents identified as Matis (1.5%), First Nations (1.2%), or Inuit (0.1%).

Table 3. Ethnicity of respondents

Ethnicity	<i>n</i>	%
Canadian	3618	39.6
British	1059	11.6
White	660	7.2
Scottish	609	6.7
Irish	567	6.2
French	296	3.2
German	283	3.1
Dutch	191	2.1
Filipino	179	2.0
Black or African American	186	2.0
Italian	171	1.9
South Asian	154	1.7
Chinese	138	1.5
Asian	133	1.5
Polish	134	1.5
Ukrainian	86	0.9
Welsh	51	0.6
East Asian	48	0.5
Portugese	45	0.5
Indigenous	31	0.3
Other	366	7.7
Prefer not to say	88	1.8
Total	9141	100

Note. Multiple responses allowed, hence total responses is greater than total sample. n = number of respondents, % = percentage of respondents per category.

Professional education

Respondents were asked to indicate where they received their professional education as a nurse. A total of 4,780 respondents reported the country in which they received their nursing education (Table 4). Most respondents received their professional education in Canada (92.1%), the Philippines (1.7%), or India (1.3%).

Table 4. Country of education of respondents

Country of education	<i>n</i>	%
Canada	4404	92.1
Phillippines	82	1.7
India	63	1.3
UK	42	0.9
USA	42	0.9
Poland	16	0.3
Iran	13	0.3
Jamaica	9	0.2
China	6	0.1
Nigeria	5	0.1
Hong Kong	4	0.1
Pakistan	3	0.1
Other	91	1.5
Prefer not to say	18	0.4
Total	4780	100

Note. *n* = number of respondents, % = percentage of respondents.

Caregiver responsibilities

Almost one-third of respondents ($n = 1600$, 30.9%) reported having childcare responsibilities at home and one-quarter of respondents ($n = 1239$, 24%) reported having caregiver responsibilities other than children at home.

When asked if their caregiving responsibilities had changed in response to COVID-19, 79.8% ($n = 1889$) reported their responsibilities had moderately or significantly increased (Figure 3). Few respondents (3.6%) reported that their caregiver responsibilities had moderately or significantly decreased.

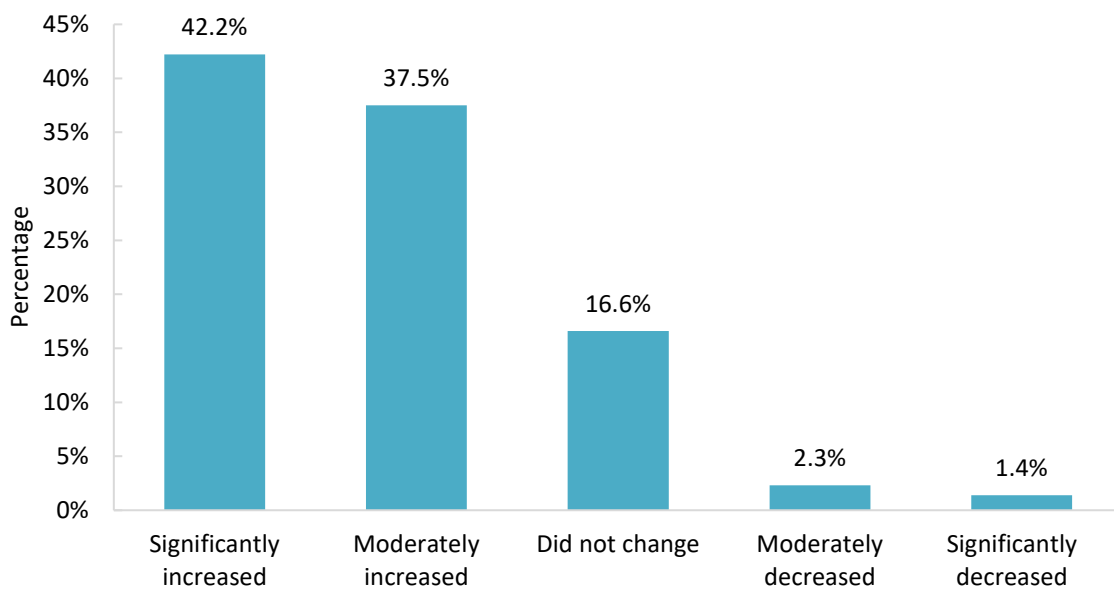


Figure 3. Change in caregiver responsibilities in response to COVID-19 pandemic ($n = 2368$).

Occupational demographics

Primary role

Respondents were asked to indicate their role at their primary place of employment prior to the start of the pandemic (Figure 4). A majority of respondents ($n = 2845$, 59.5%) worked as staff nurse followed by nurses working in management ($n = 335$, 7.0%).

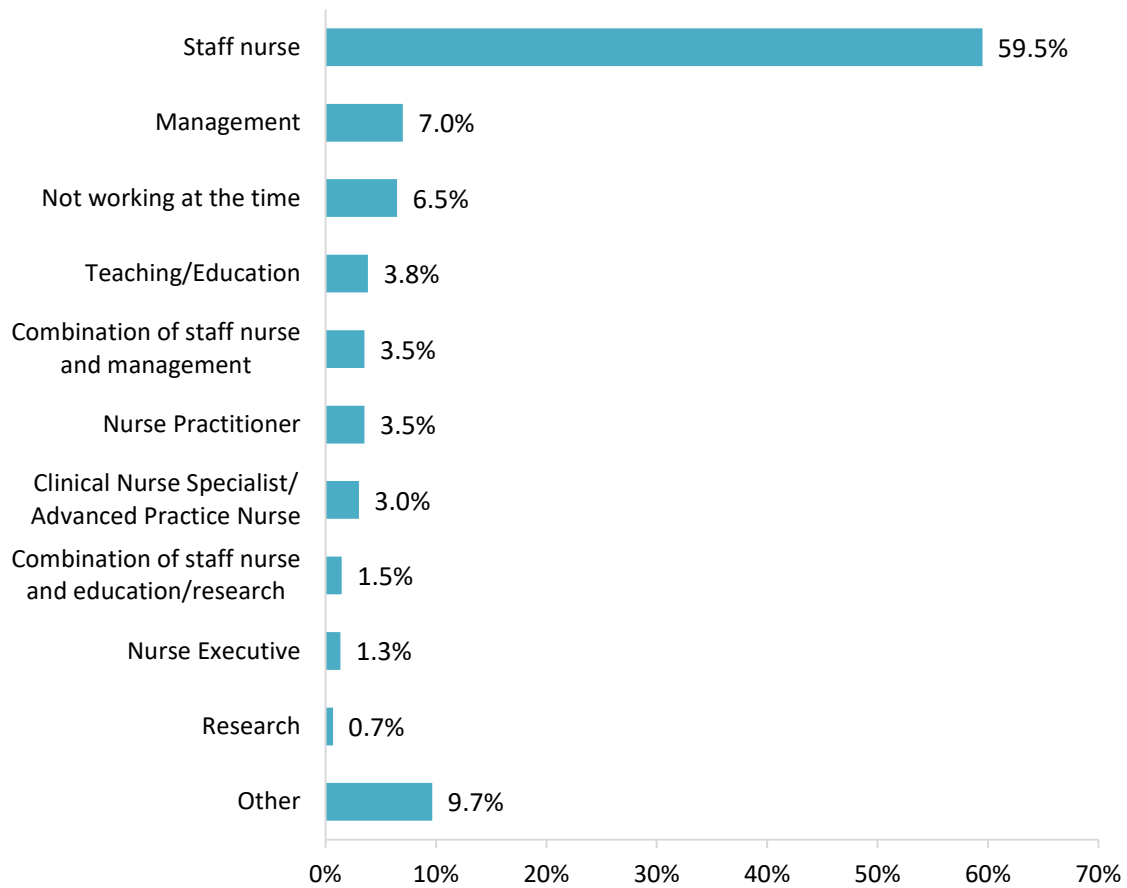


Figure 4. Primary employment role of respondents ($n = 4782$).

Employment status

Respondents were asked to indicate their employment status before the pandemic (Figure 5). Just over half of the respondents worked full-time (59.1%); either in a permanent position (54.5%), contracted arrangement (3.2%), or as an agency nurse (0.4%). Approximately 24.7% worked in part-time positions. Few people worked in casual positions (5.3%).

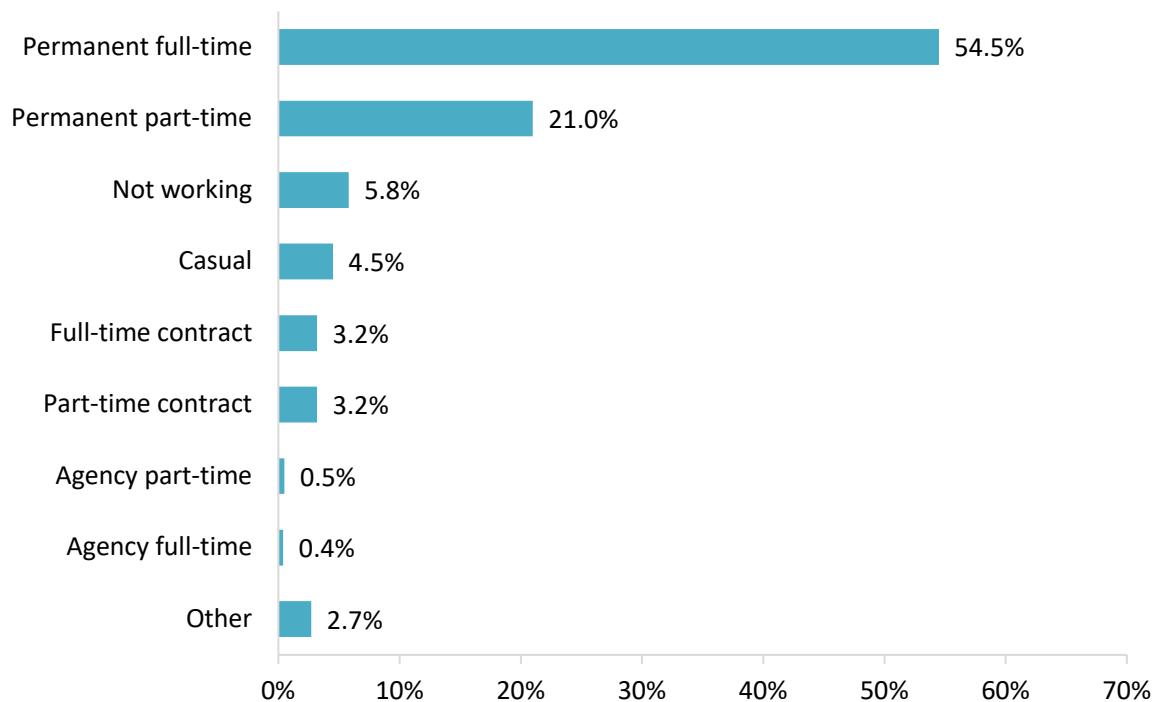


Figure 5. Employment status prior to the pandemic for all respondents ($n = 4738$).

Respondents were also asked if their working status had changed since the start of the pandemic. Of the 4,775 respondents, 36.9% ($n = 1,762$) indicated that their work status had changed. Comparisons were then made to see how employment status had changed among these respondents (Figure 6). Among this cohort, there was a reduction in the proportion of people working in permanent full-time positions, permanent part-time positions and working but not as a nurse. Conversely, there was an increase in the proportion of people working casual employment status, full-time contract and part-time contract.

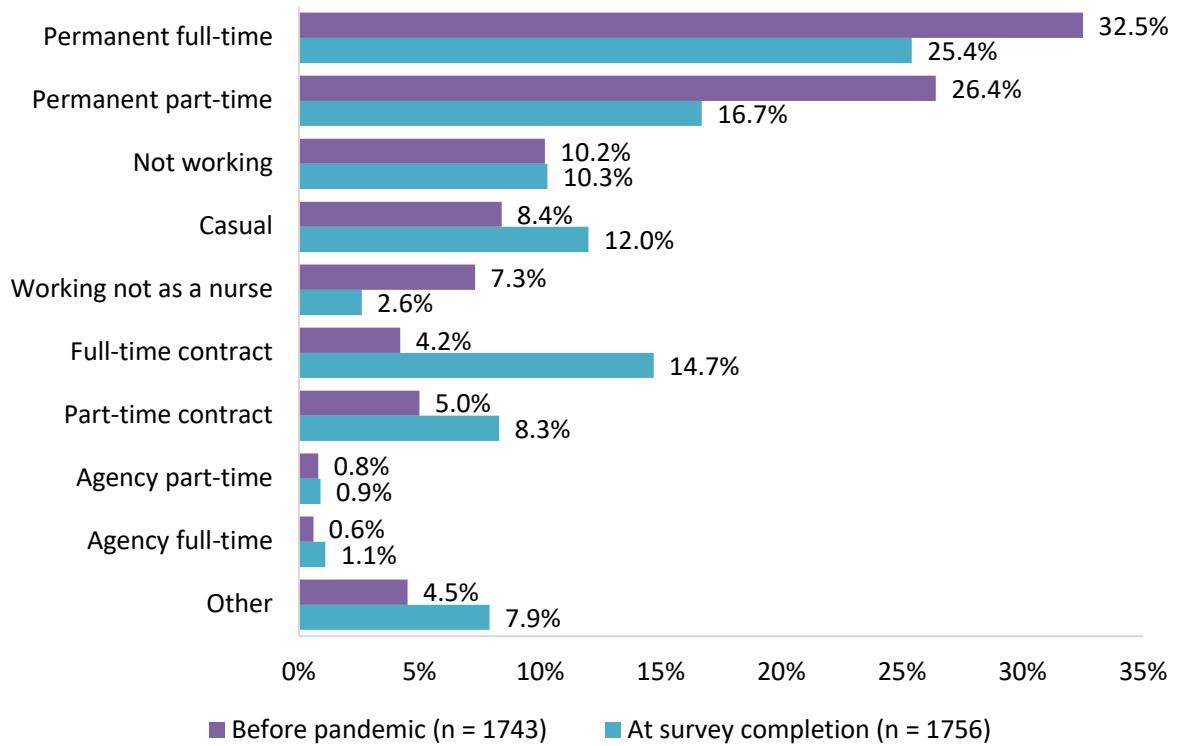


Figure 6. Employment status prior to the pandemic at time of completion for respondents who had changed employment status.

Healthcare experience

Overall, respondents were highly experienced healthcare professionals. Over one-quarter of respondents ($n = 1362$, 28.4%) reported having 30 years or more experience working in healthcare (Figure 7). Approximately one in five (19.6%) had less than five years of experience.

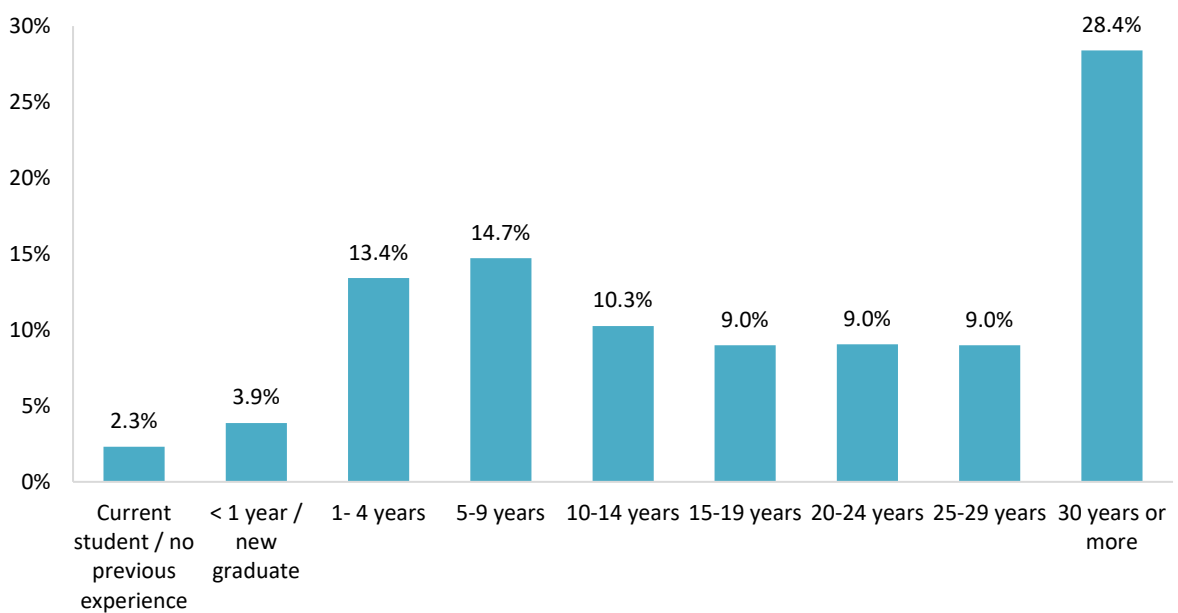


Figure 7. Healthcare work experience of respondents ($n = 4796$).

Workplace

Respondents were asked to report the workplace/organisation type for their *primary* place of work. Respondents worked across a variety of facilities and organisations; the largest proportion being hospitals (Table 5). Approximately 1 in 10 respondents worked in long-term care facilities.

Table 5. Main workplace / organisation type of respondents

Workplace	Frequency (n)	Percent (%)
Hospital	2384	50.2
Community health care service (excluding Indigenous)	394	8.3
Public Health	386	8.1
Long-term care (not-for-profit)	191	4.0
Long-term care (profit)	185	3.9
Family practice	163	3.4
Mental health services	116	2.4
Other private health service	115	2.4
Other government department or agency	84	1.8
Indigenous health services	63	1.3
Long-term care (unsure of status)	60	1.3
Tertiary education facility	51	1.1
Rehabilitation service	43	0.9
Agency	40	0.8
Correctional services	39	0.8
Retirement home (profit)	31	0.7
Retirement home (not-for-profit)	16	0.3
Disability services	12	0.3
Other	361	7.6
Total	4747	100

Workplace was also collapsed into four broader categories or sectors: Hospital (including rehabilitation services), Primary care (including family practice and community health services), Long-term and retirement home care, and Other (Table 6). The collapsing of categories was undertaken for subsequent comparative analyses across selected outcomes.

Table 6. Broad workplace categories or sectors.

Workplace	Frequency (n)	Percent (%)
Hospital	2427	51.1
Primary care	748	15.8
Long-term/Retirement care	491	10.4
Other	1081	22.8

Respondents who reported working in public hospitals were further asked the the type of public hospital they were based at (Figure 8). Just over half of respondents worked in teaching hospitals ($n = 1235$, 52.2%).

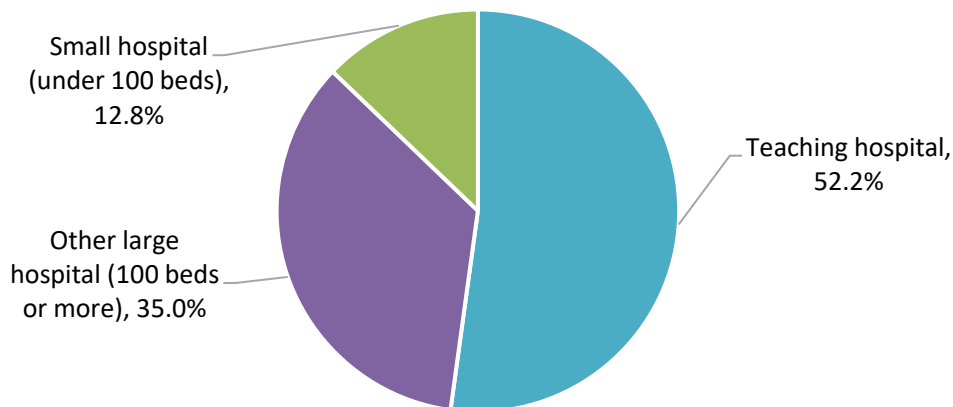


Figure 8. Type of employment facility of respondents working in public hospitals, ($n = 2367$).

Work location

Respondents were asked to report province or territory of their primary workplace (Table 7). Respondents mainly worked in Ontario (92.7%), followed by Manitoba (2.1%) and Nova Scotia (1.5%). All other provinces and territories had <1% of the total responses (Table 7).

Table 7. Province/ territory for place of work

Province/Territory for place of work	Frequency (<i>n</i>)	Percent (%)
Ontario	4719	92.7
Manitoba	109	2.1
Nova Scotia	74	1.5
British Columbia	45	0.9
Newfoundland and Labrador	37	0.7
Alberta	18	0.4
Quebec	16	0.3
Saskatchewan	9	0.2
Northwest Territories	8	0.2
New Brunswick	5	0.1
Nunavut	2	0.0
Prince Edward Island	2	0.0
Yukon	1	0.0
More than one province/territory	29	0.6
Other	17	0.3
Prefer not to say	1	0.0
Don't know	1	0.0
Total	5093	100.0

Healthcare leadership and policy

COVID-19 workplace plan

Respondents were asked several questions about their workplace plans and protocols regarding responding to known or suspected COVID-19 cases (Figure 9). Almost half of all respondents ($n = 2126$, 48.3%) stated their workplace had a COVID-19 plan or protocol in place to respond to known or suspected cases when the pandemic was announced. At the time of completing the survey this proportion had increased whereby most respondents ($n = 4094$, 93.4%) reported their workplace *currently* has a COVID-19 plan or protocol.

When respondents were asked whether their workplace COVID-19 plan or protocol had been reviewed or updated since the start of the pandemic, three-quarters ($n = 3409$, 77.7%) reported that they were aware it had been reviewed.

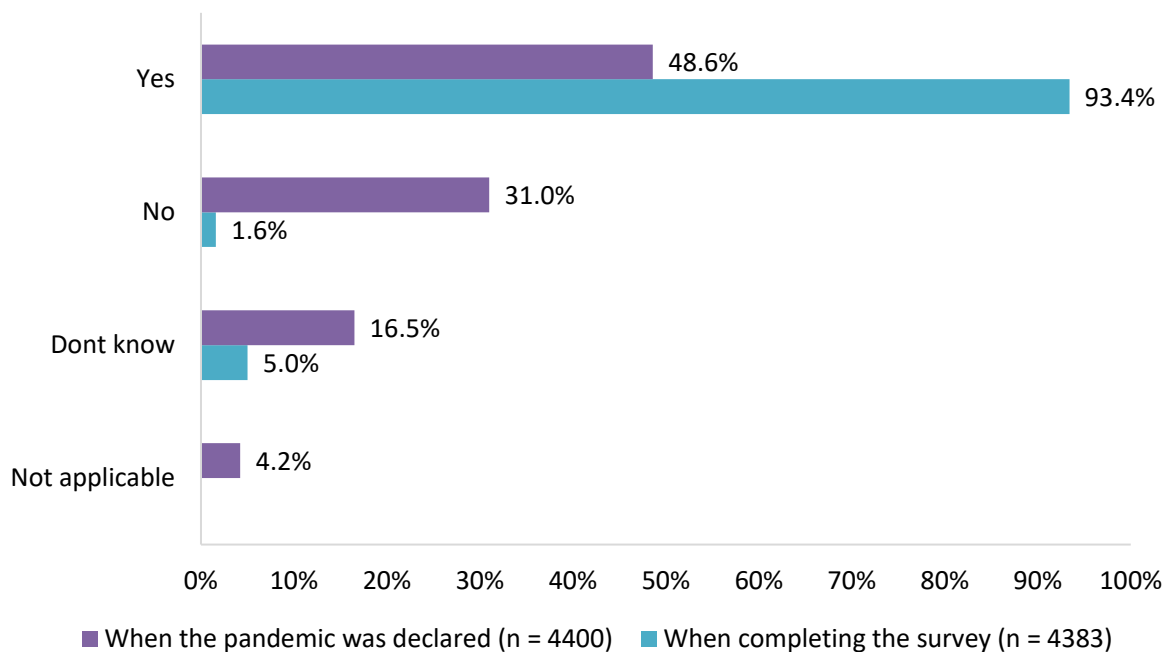


Figure 9. Workplace plan or protocol in place for known or suspected COVID-19 cases

COVID-19 infection prevention and control training

Respondents were asked to indicate whether they had received COVID-19 infection prevention and control training. Overall, 79.9% ($n = 3498$) of respondents reported receiving training. For those who received COVID-19 infection control training, nearly two-thirds (63.7%) reported feeling very confident or extremely confident in their ability to practice safely as a result of the training they received (Figure 10).

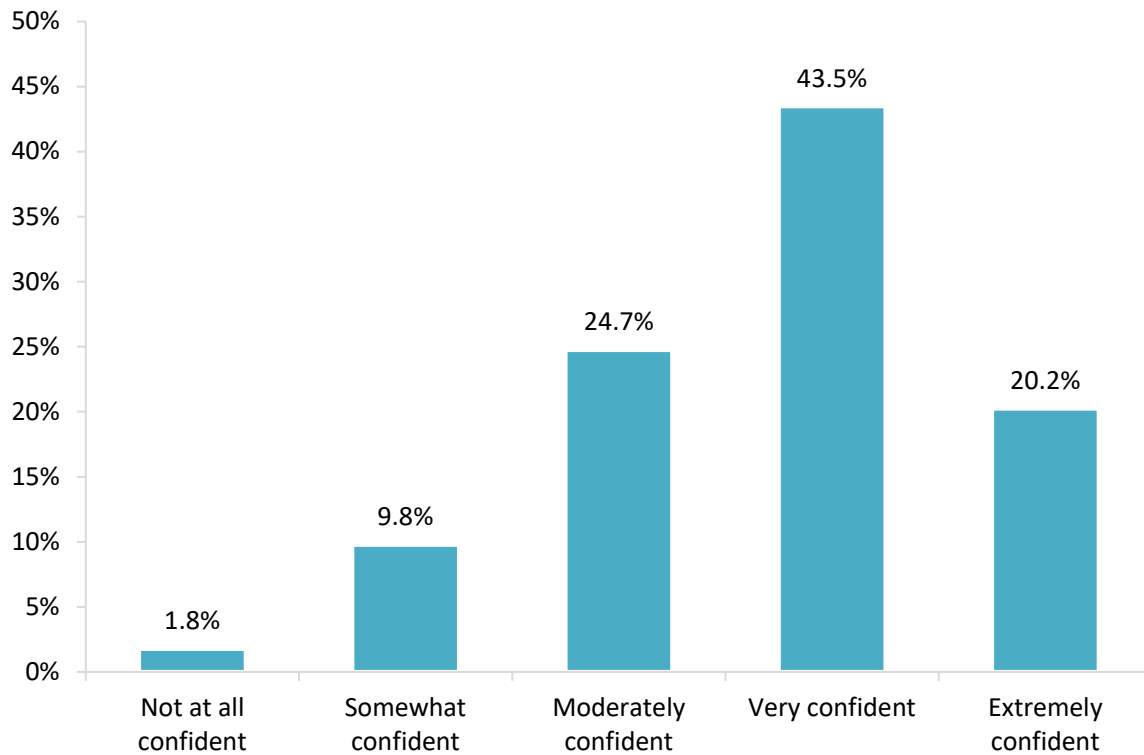


Figure 10. Confidence in ability to practice safely because of COVID-19 infection prevention and control training received by respondents ($n = 3399$).

COVID-19 in the workplace and care of COVID-19 patients

Respondents were asked two questions regarding the presence of COVID-19 patients in their workplace: (i) if their workplace had provided care for *suspected* COVID-19 patients, and (ii) whether their workplace had provided care for confirmed COVID-19 patients (Figure 11). Most respondents ($n = 3340$, 87.6%) reported their workplace had provided care to one or more patients/clients with *suspected* COVID-19 with slightly less ($n = 3117$, 82.0%) reported having cared for cases with *confirmed* COVID-19, most respondents replied they had.

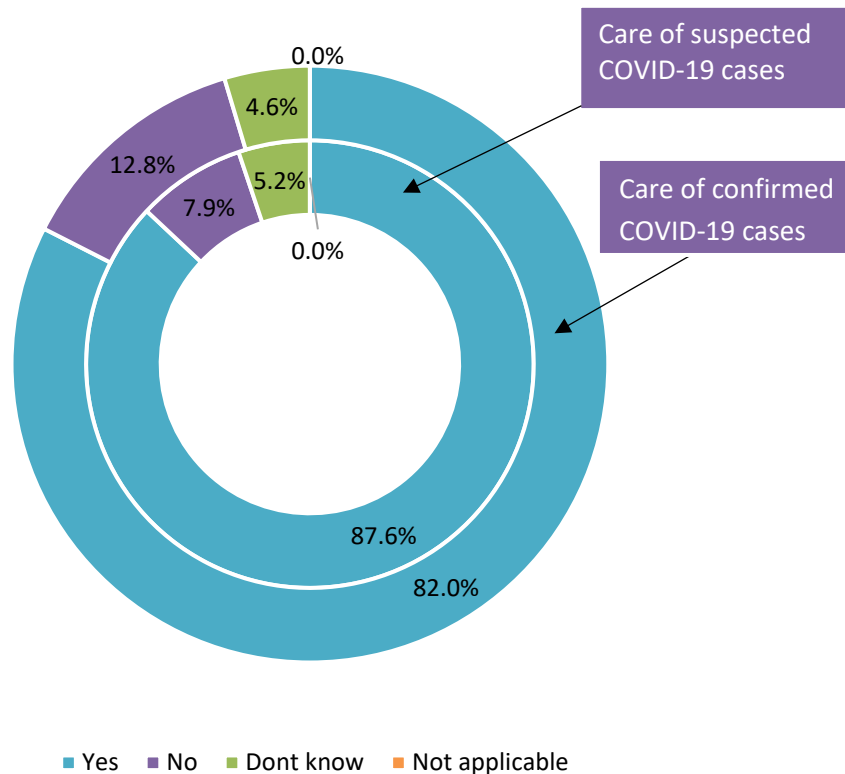


Figure 11. The proportion of workplaces that provided care to patients/clients with known or suspected COVID-19 as stated by respondents.

A series of questions regarding caring for patients with suspected or confirmed COVID-19 were included in the study. Just over one-third of respondents ($n = 1535$, 36.3%) indicated that their workplace had assigned or asked for dedicated staff to care for COVID-19 patients. The remainder replied that their workplace had *not* assigned dedicated staff to care for COVID-19 patients ($n = 1620$, 38.4%), were unsure ($n = 469$, 11.1%), or this was not applicable to their situation ($n = 599$, 14.2%).

For those whose workplace had cared for one or more patients/clients with suspected or confirmed cases of COVID-19, 41.7% ($n = 984$) of respondents reported that their workplace had cared for 1-50 cases since the start of the pandemic (Figure 12). After this, there was a slow decline towards respondents who were based at workplaces that had cared for over 2000 cases (9.4%). Note also, 897 respondents indicated that they did not know the number of confirmed or suspected cases cared for at their workplace.

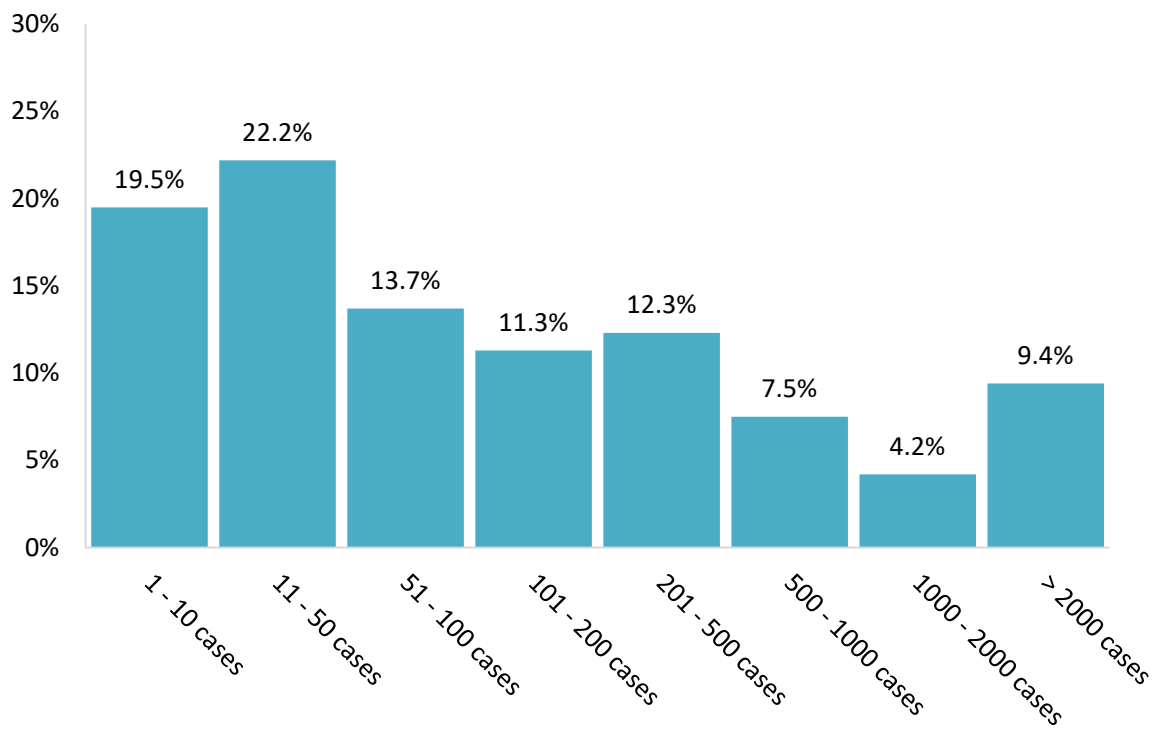


Figure 12. Number of confirmed or suspected COVID-19 cases cared for at workplaces since the start of the pandemic as stated by respondents ($n = 2361$).

Those respondents who worked in a place where care was provided to one or more patients with confirmed or suspected COVID-19 were also asked if they had provided direct care to a patient/client with confirmed or suspected COVID-19 (Figure 13). Over a quarter of respondents ($n = 902$, 27.1%) indicated they had provided direct care to a patient/client with confirmed COVID-19.

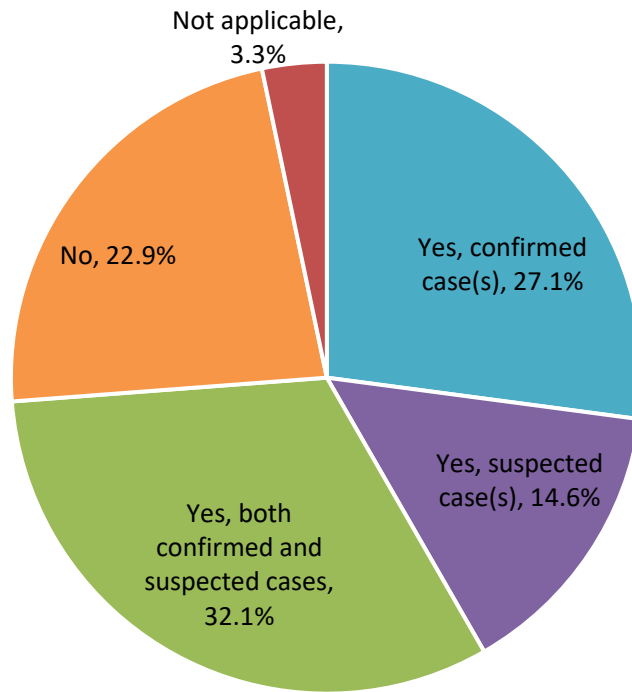


Figure 13. Experience providing direct care to a confirmed or suspected COVID-19 case of respondents ($n = 3326$).

The respondents who provided care to confirmed and/or suspected COVID-19 cases were asked in what care setting they provided this care (Table 8). Multiple responses were permitted. Of the options provided, the most frequently reported sites were hospital specialty units, designated COVID-19 wards/wings, hospital ICUs, and community health care facilities.

Table 8. Care setting for confirmed or suspected COVID-19 patients (*n* = 3224)

Setting	Frequency (<i>n</i>)	Percent (%)
Hospital ICU (medical surgical, cardiac or other)	672	27.6
Emergency Department	440	18.1
Hospital designated COVID-19 unit/wing	375	15.4
Hospital Specialty Unit (e.g., respiratory)	311	12.8
Long-term care home	279	11.5
Community health care service	159	6.5
Outpatient Services	154	6.3
Home care	104	4.3
Public health	90	3.7
Family practice/ GP	52	2.1
Retirement home	49	2.0
Indigenous health services	35	1.4
Correctional services	32	1.3
Hospital neonatal ICU	29	1.2
Hospital paediatric ICU	16	0.7
Designated COVID-19 hotel accommodation	13	0.5
Hospital designated COVID-19 ward/wing	375	0.5
Nurse practitioner-led clinic	10	0.4
Disability Services	2	0.1
Other	402	16.5

Note. Multiple responses permitted; percent sum greater than 100.

COVID-19 Information at your workplace

Respondents were asked to rate the COVID-19 information provided at their workplace in terms of being timely, trustworthy, clearly written, comprehensive, and consistent with other sources (Figure 14). Across all categories, at least 60% of respondents rated the information as good to excellent.

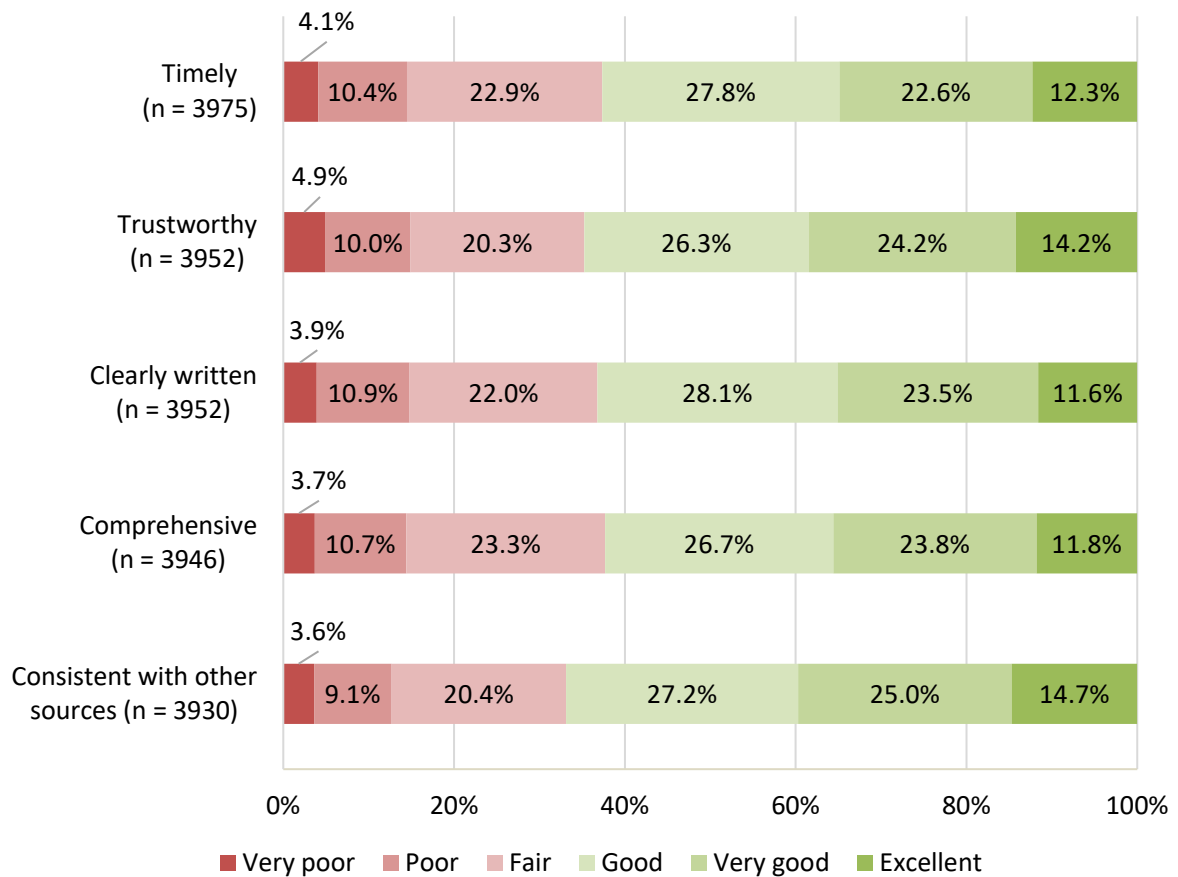


Figure 14. Ratings of COVID-19 information provision at respondents' workplaces.

Respondents were asked to indicate any other sources they found to be useful for workplace-related information regarding COVID-19 (Figure 15). There were 3,780 respondents to the question. The most commonly selected sources were national government ministries of health ($n = 2915$, 77.1%) and Health Canada ($n = 2200$, 58.2%) and the RNAO ($n = 2072$, 54.8%).

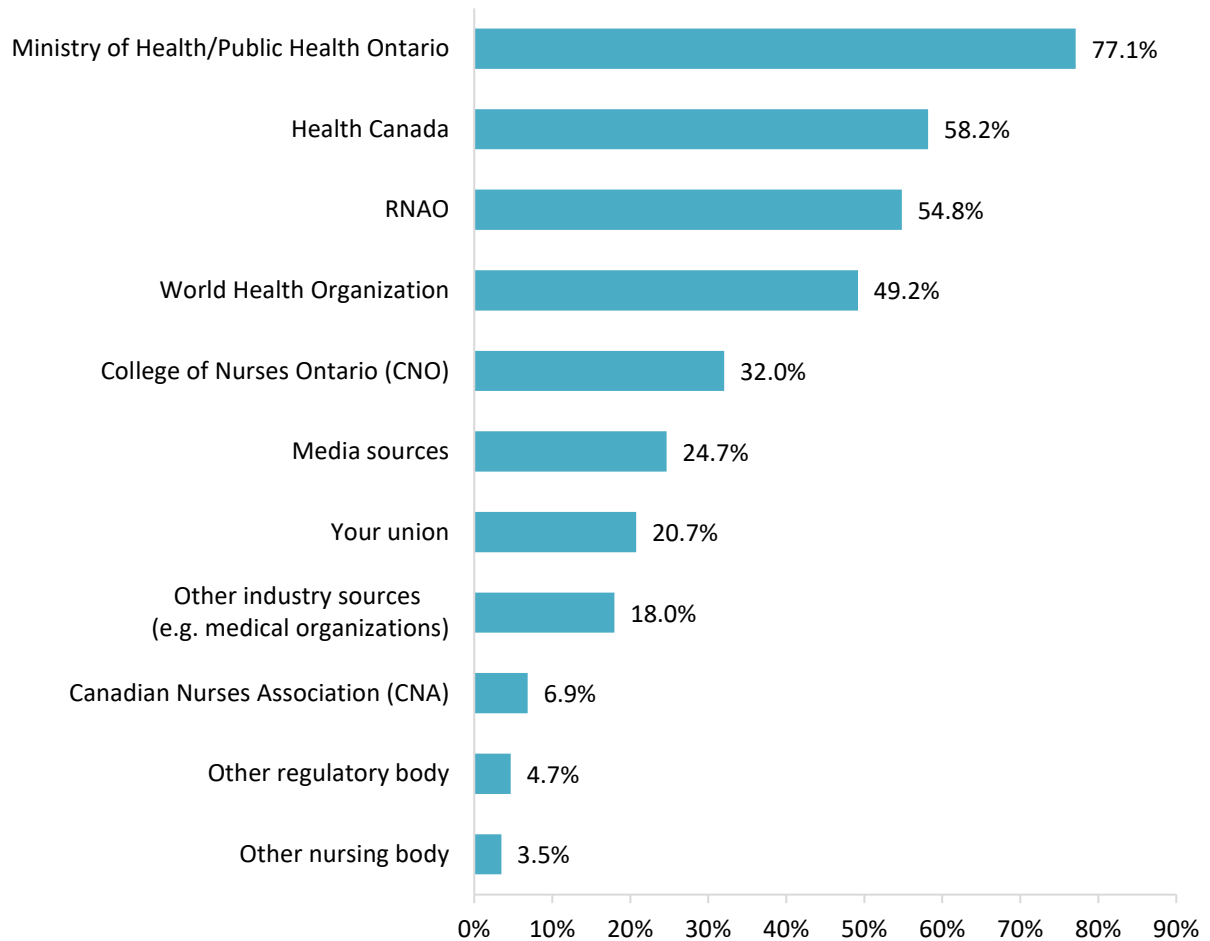


Figure 15. Useful workplace-related information sources about COVID-19 ($n = 3780$)

Note. Multiple responses permitted; percent sum greater than 100.

Workplace preparedness

Survey respondents were asked to rate workplace's preparedness to manage COVID-19 cases identified at their workplace at the start of the pandemic and now, on a five point scale ranging from very poor to excellent (Figure 16). Results showed that there was improvement in ratings; 34.9% of respondents rated their workplace's preparedness as good, very good or excellent at the start of the pandemic. This had increased to 77.3% at the time of completing the survey.

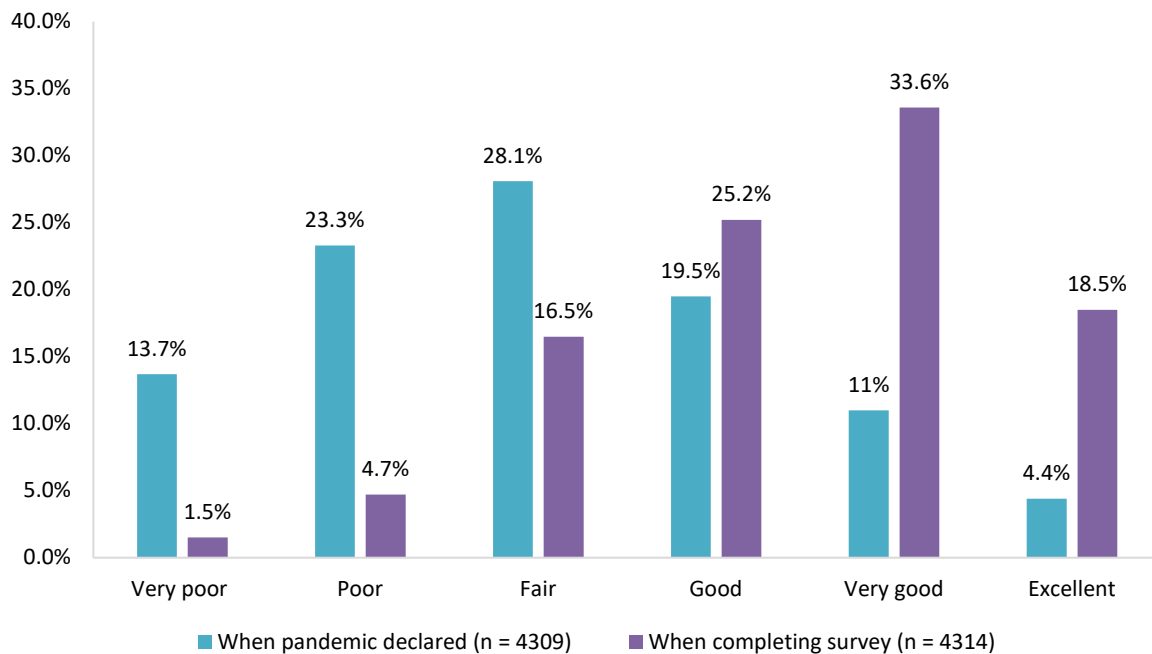


Figure 16. Respondent ratings of their workplace's preparedness to manage COVID-19 cases.

Respondents were asked to rate their organisation's preparedness with respect to staff screening and support (Figure 17) and policies and procedures (Figure 18) across a range of areas on a 6-point scale ranging from very poor to excellent. Respondents could also indicate if they did not know or a policy/procedure was not applicable. With respect to staff screening and support, procedures for staff screening for risk factors or symptoms of COVID-19 ($n = 2788$, 74%), general cleaning ($n = 2508$, 67.1%), and cleaning of isolation rooms ($n = 2157$, 57.8%) were rated as good to excellent by a majority of respondents. In contrast, half of respondents rated policies and procedures as fair to very poor in regards to preventing staff abuse (e.g., physical or verbal harassment; $n = 1884$, 50.2%), being able to deploy more staff if required ($n = 1924$, 51.7%), and debriefing processes ($n = 1907$, 51.1%).

With respect to ratings of policies and procedures, ability to deploy more staff, social distancing and communication of policies and procedures were the more negatively rated areas. Cleaning protocols tended to be the most positively rated areas.

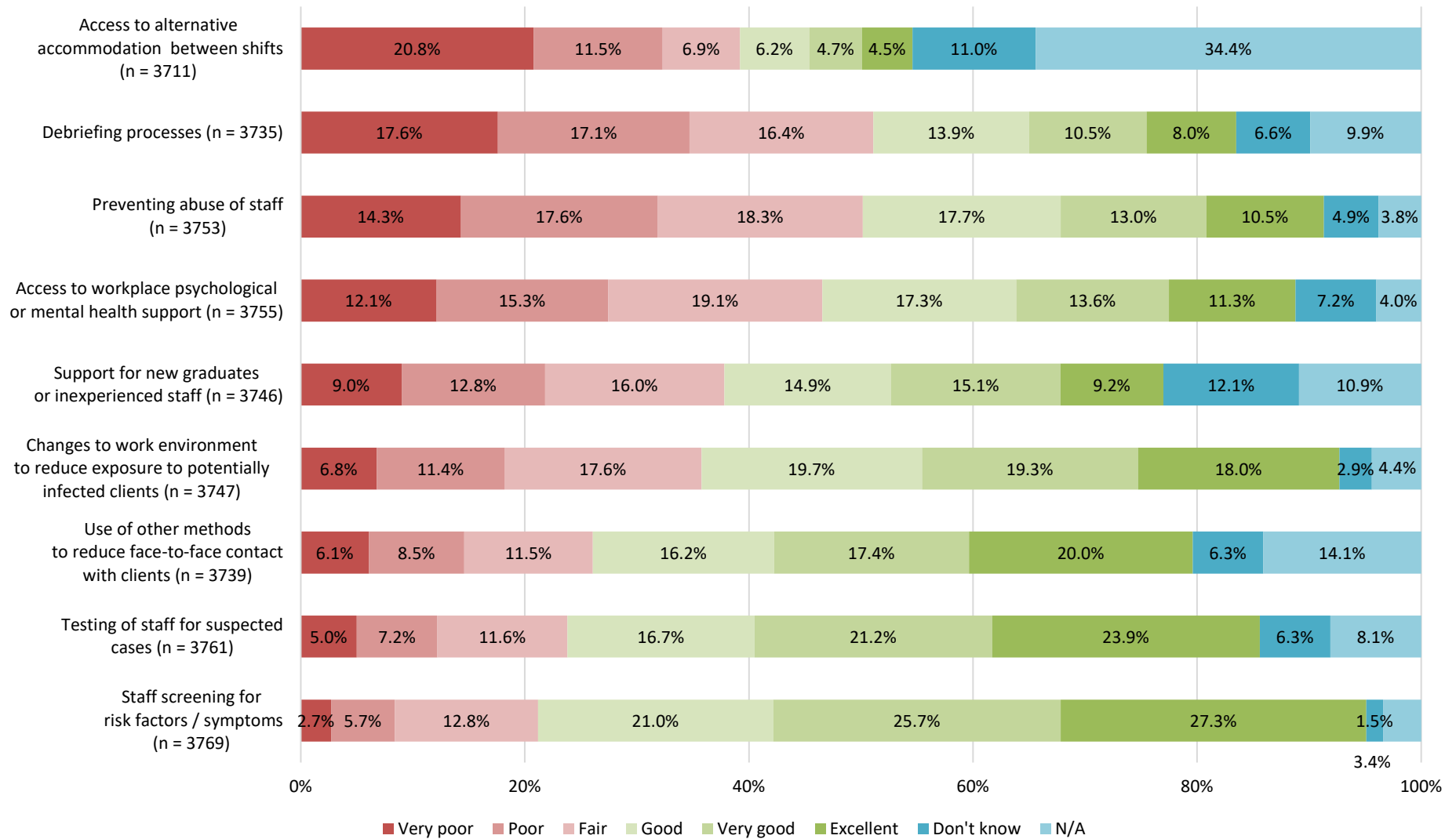


Figure 17. Rating primary workplace on staff screening and support.

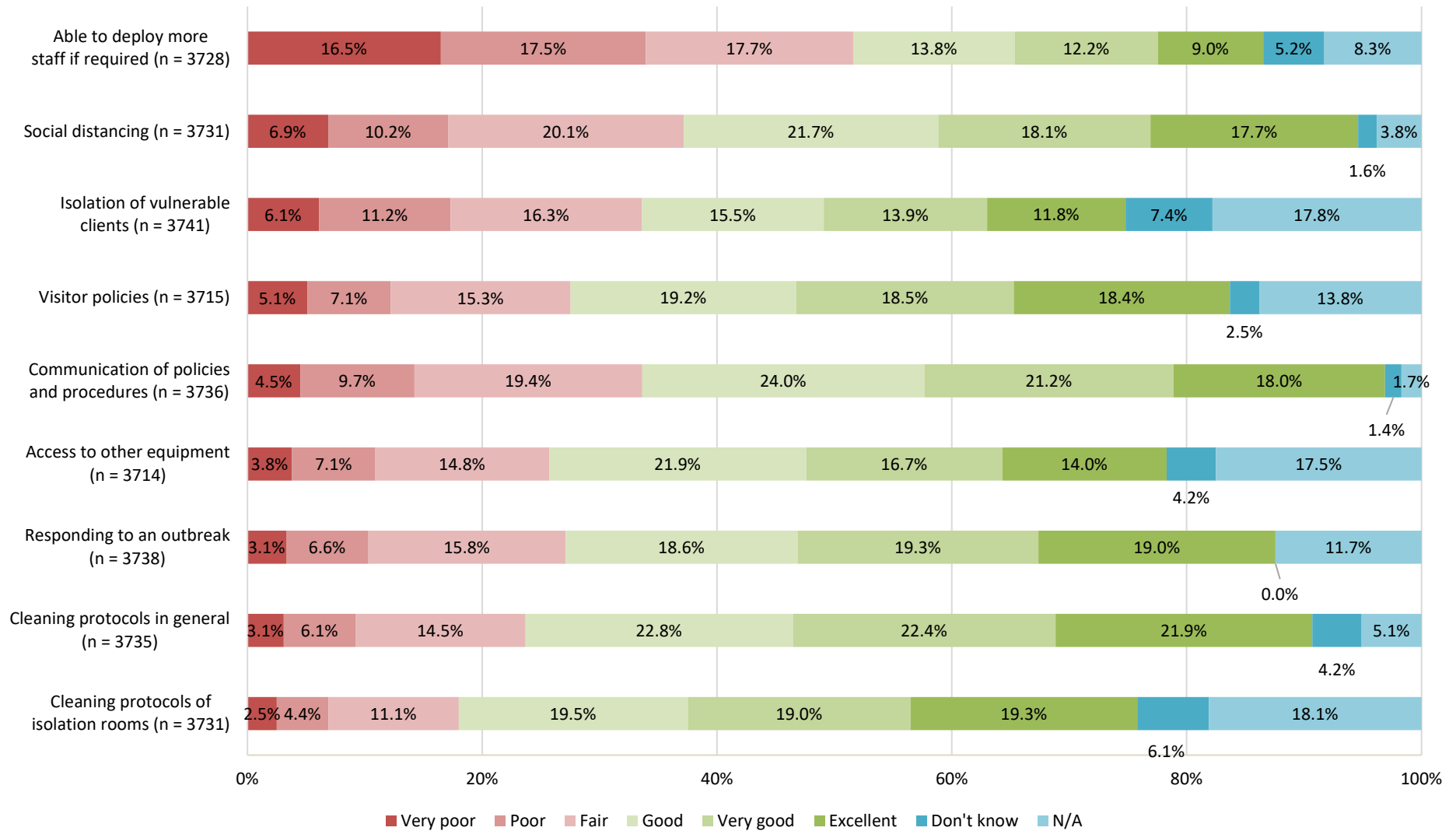


Figure 18. Ratings of primary workplace policies and procedures.

Concerns about the workplace because of COVID-19

Respondents were asked to indicate their level of concern in response to a series of statements related to the workplace as a result of COVID-19 (Figure 19). A majority of respondents were moderately to extremely concerned about having adequate staffing levels (i.e., number of staff/ratios of staff to patients or clients; 69.1%), the right skills mix (i.e., number/ratio of the right kinds of staff) in their workplace (62.5%), their ability to manage their workload (55.9%), and the welfare of their colleagues (52.0%). Respondents were generally not at all or only slightly concerned about having access to hand sanitizer at work (10.4%), having supplies to disinfect themselves before going home (16.5%) or losing their shifts/work either due to home-schooling children or other caregiving responsibilities (19.5%).

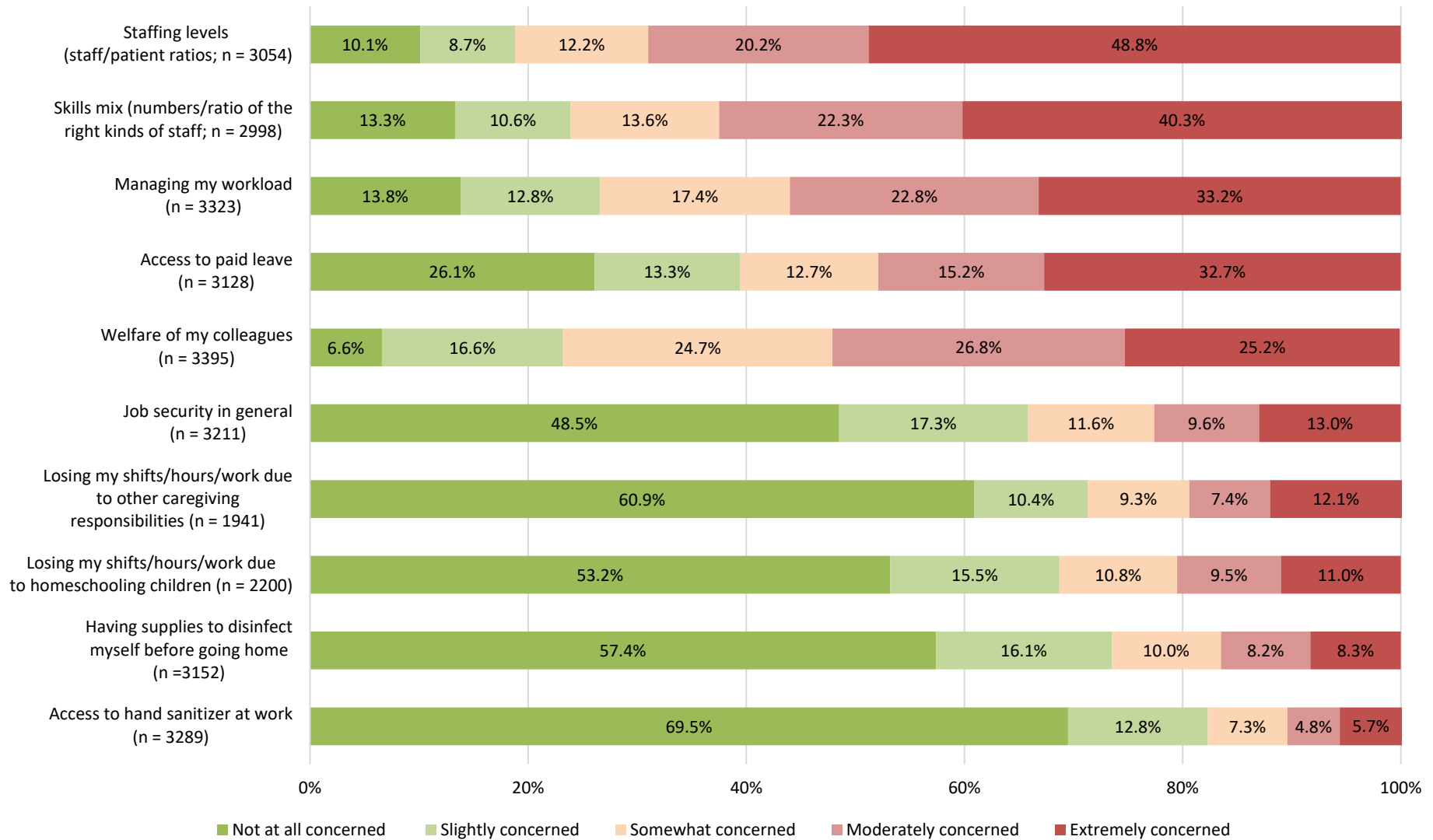


Figure 19. General workforce concerns because of COVID-19 among all respondents.

Note. For each item, those who selected 'Not applicable' were excluded from the analysis.

Community support and harassment

Respondents were asked three questions regarding: (i) having felt or experienced community support for their work, (ii) experienced abuse or threats at work from the public or patients, and (iii) experienced abuse or threats outside of work (Figure 20). Nearly three-quarters of respondents (73.5%) had experienced or felt community support for the work they do. However, half of respondents (50.5%) had experienced abuse or been threatened by members of the public/patients at work and 23.0% of respondents had experienced abuse or felt threatened by members of the public in settings outside of work.

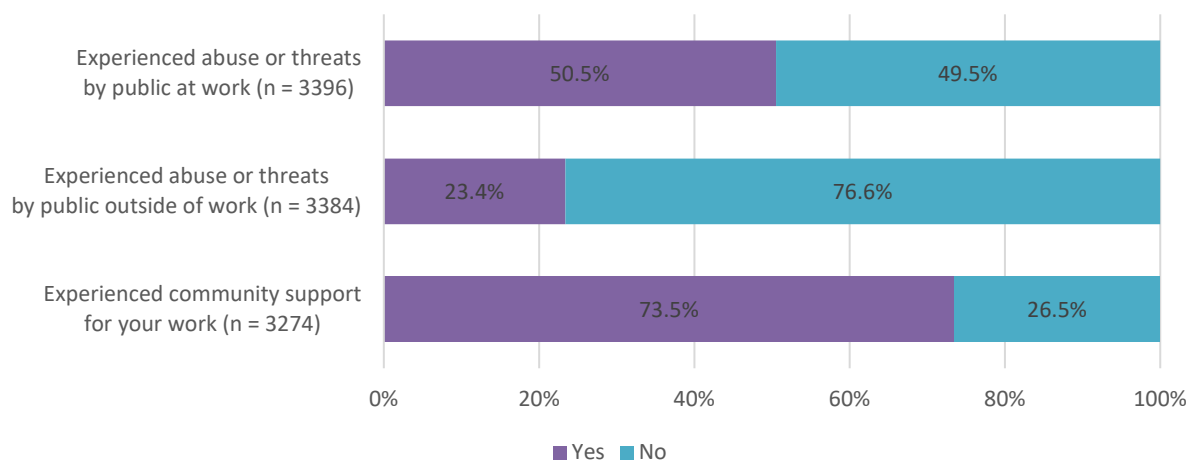


Figure 20. Abuse/threats or support by members of the public or patients in the work setting. Note. Respondents indicating “Don’t know” were removed from analysis.

Patterns of abuse or harm were also explored by workplace (Figure 21). Some variation was observed, with threats or abuse more prevalent in hospital and long-term / retirement care.

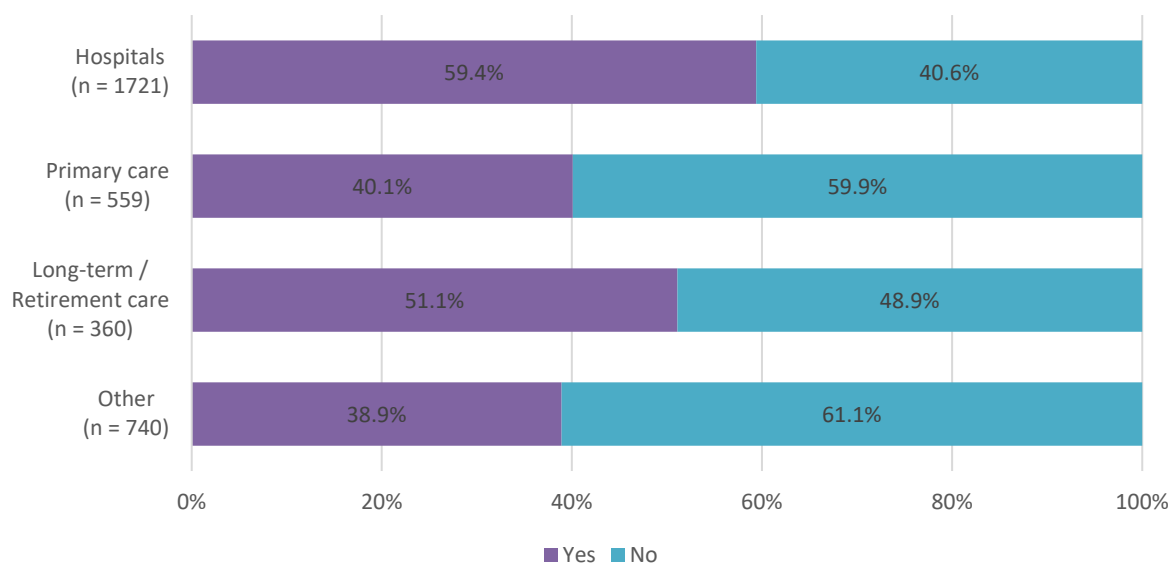


Figure 21. Abuse/threats by members of the public or patients in the work setting by work sector. Note. Respondents indicating “Don’t know” were removed from analysis.

Workload Changes

Respondents were also asked to indicate to what degree their workload had changed during the pandemic. More than eight in ten (83.2%) of respondents felt their workload had slightly, moderately or significantly increased since the pandemic (Figure 22). Contrastingly, few respondents (7.2%) reported their work had slightly, moderately or significantly decreased.

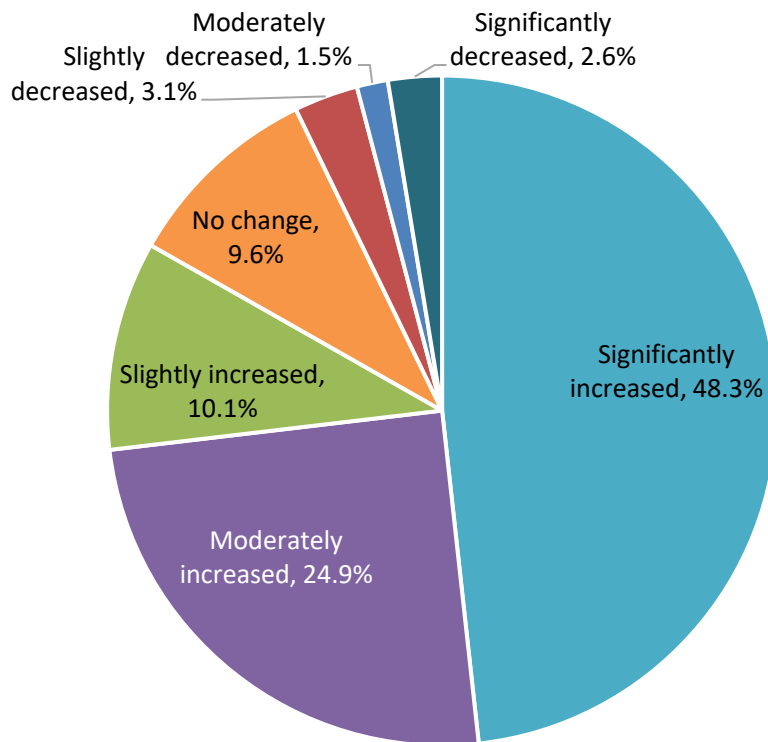


Figure 22. Workload changes during the pandemic of all respondents.

Employment conditions and outcomes

Respondents were asked a series of questions regarding the hours worked per week. Respondents were asked: (i) how many hours they worked per week not including paid or unpaid overtime, (ii) how many hours of paid overtime/compensated additional hours they worked per week, and (iii) how many hours of unpaid overtime/uncompensated additional hours they worked. To account for extreme values, a maximum of 84 hours work per week, 48 hours per week paid overtime and 48 hours per week unpaid overtime were set. The mean number of: hours worked per week was 35.9 ($SD = 12.0$); paid overtime per week was 3.29 ($SD = 7.02$); and unpaid overtime per week was 3.66 ($SD = 5.56$).

The majority of respondents (87.9%) reported that they did not work any double-shifts in the last month. Of those who did report working a double-shift ($n = 342$), the mean number of double-shifts was 2.95 ($SD = 2.92$) per month.

Respondents were also asked whether their working hours were more than they would like, about right or less than they would like (Figure 23). Nearly half (47.9%) of respondents working hours were either a little or a lot more than they would like, and a further 45.9% thought they were about right. Few respondents (6.2%) working hours were a little or a lot less than they would like.

Half of respondents (50.2%) reported that they would prefer their average work hours per week to remain the same after the pandemic and 43.8% respondents reported wanting to decrease their average work hours. Few respondents (6.0%) wanted increase their working hours.

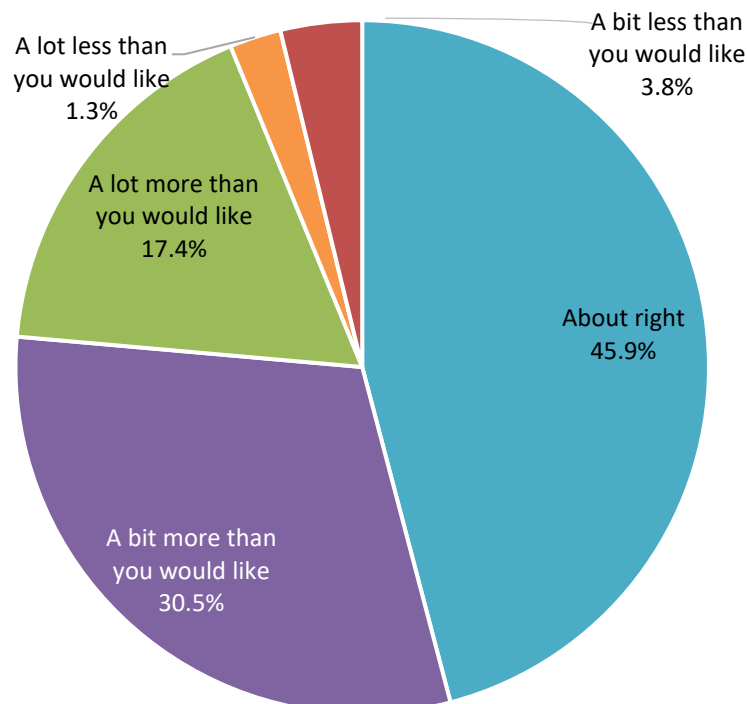


Figure 23. Perception of current working hours ($n = 2801$).

Multiple jobs

Respondents were asked if they worked at more than one workplace at the start of the pandemic. Of those who indicated that they were ($n = 1093$), one-third (34.3%, $n=375$) were asked to give up work at the other workplace(s) with 19.6% being provided with advice on their rights to do so. Most of those who were asked to stop work at more than one place did so (87.5%), with only a small proportion (12.5%) continuing to work at more than one workplace.

Increase in staff and students

Respondents were asked whether their organisation had increased staff to cope with demand. Nearly half reported that their organisation had slightly (17.0%), moderately (14.3%) or significantly (16.4%) increased the number of staff work hours on each shift to cope with demand. Further, over one-third of respondents (37.3%) reported that their workplace had recruited student nurses to support the regular workforce to cope with demand.

Shift hours changes

When respondents were asked if their work schedule had been impacted by the pandemic, over one-third reported their employment work hours had been unaffected (Table 9). Four in ten (41.5%) of respondents reported an increase in paid or unpaid hours. Few respondents indicated that their hours had reduced. Some respondents indicated that they were no longer employed in their position.

Table 9. Impact of pandemic on work schedules of respondents ($n = 3201$)

Impact on employment/ roster	Frequency (<i>n</i>)	Percent (%)
My work schedule has been unaffected	1134	35.4
Increase in paid hours	844	26.4
Increase in unpaid hours	483	15.1
Hours reduced, no reimbursement	178	5.6
Hours reduced, topped up by government program	25	0.8
Hours reduced, topped up through employer payments	6	0.2
Alternative or flexible working arrangements put in place	17	0.5
Paid special leave	57	1.8
Took unpaid leave	82	2.6
No longer employed in the position	129	4.0
Other	246	7.7

Respondents whose work schedule had been impacted by the pandemic (i.e., either increased or decreased hours) were asked which workplace factors had affected those changes (Figure 24). The most frequently reported factor was a lack of staff (29.4%) followed by an increase in patient numbers (22.4%).

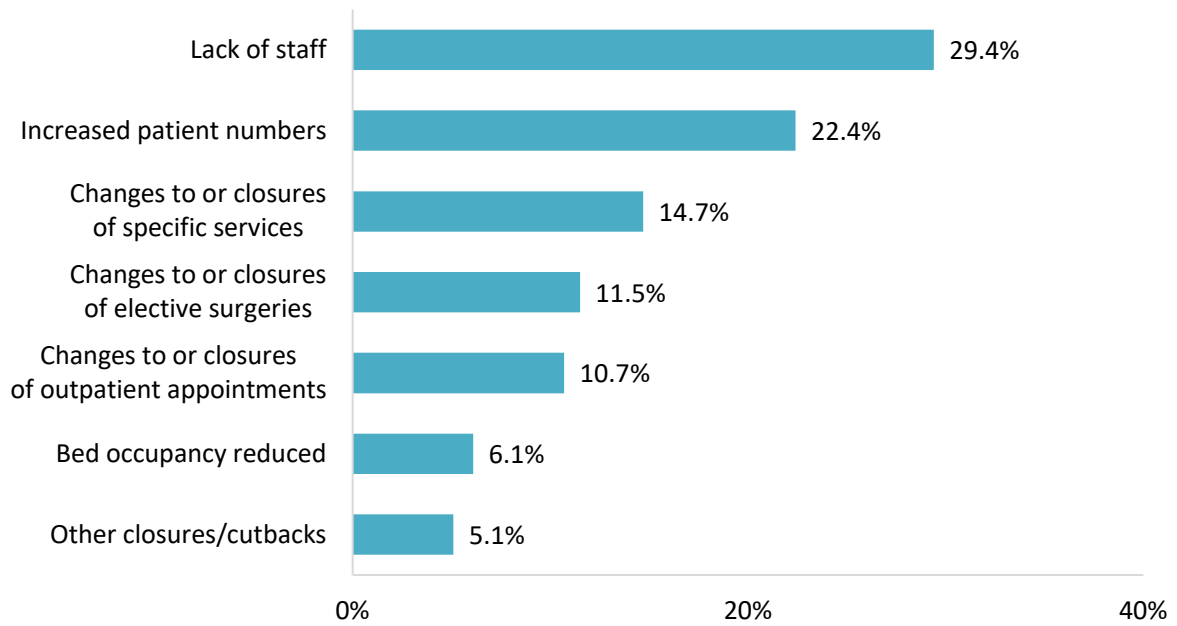


Figure 24. Factors affecting work schedule changes as indicated by respondent ($n = 1462$).
 Note. Multiple responses allowed.

Job registry

Respondents were asked whether they were added to a pandemic response job registry and were provided with a list of options (Figure 25). For approximately half of respondents ($n = 76, 47.8\%$) returned to practice after being added to added to the pandemic response job registry. In addition, of those who were, 0.5% returned to clinical practice program, 1.7% enrolled in a government funded program on upskilling, while 97.8% did not have any access to any government funded program.

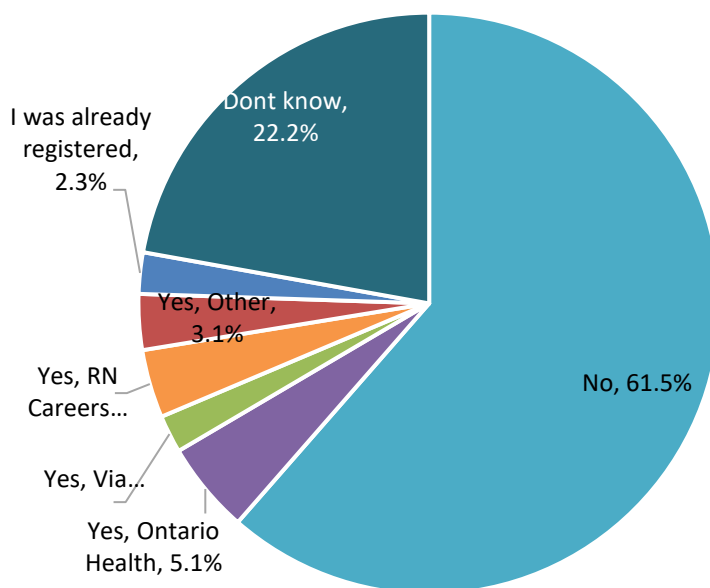


Figure 25. Pandemic response job registry ($n = 3278$).

The nursing practice environment and its impact

The following section describes workplace outcomes with respect to the following domains:

- Perceptions of the practice environment
- Workplace conditions and demands
- Personal protective equipment
- General health
- Job satisfaction
- Resilience
- Depression, anxiety, and stress
- Work engagement
- Burnout
- Intentions to leave
- Retirement

Practice environment

The quality of nursing practice environments was assessed using a modified version of the Practice Environment Scale – Nursing Work Index (PES-NWI).⁽¹²⁾ Revised subscales assessed whether nursing philosophy for quality care, praise and supervisory support, nursing leadership, and resource and staffing adequacy were present in the workplace. Scores above 2.5 showed some agreement that the desirable practice characteristic was present in the workplace, while scores below 2.5 indicated some disagreement.

On average, there was a tendency to agree that nursing philosophy for quality care ($M = 2.80$, $SD = 0.74$) and praise and supervisory support ($M = 2.59$, $SD = 0.85$) were present in the practice environment for all respondents. Nursing leadership ($M = 2.43$, $SD = 0.78$) was closer to the neutral midpoint indicating neither agreement nor disagreement that it was present in the workplace. There was a tendency to disagree that resource and staffing adequacy ($M = 2.19$, $SD = 0.83$) was present in the work environment across the sample (Figure 26).

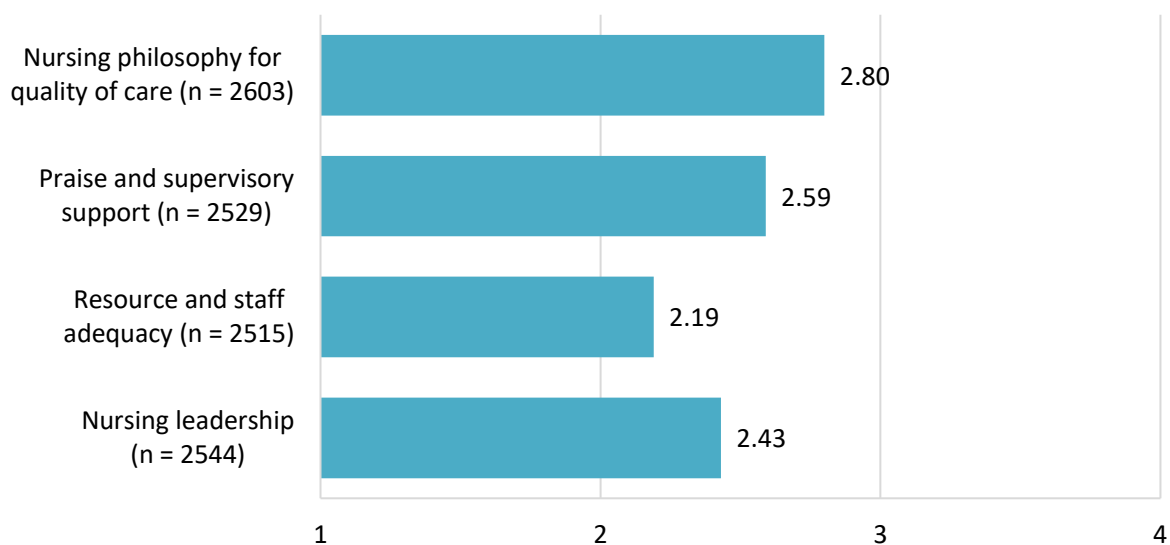


Figure 26. PES subscale mean scores for whole sample.

The quality of nursing practice environments was investigated according to main workplace (Figure 27). Respondents working in hospitals ($M = 2.04, SD = 0.76$) and long-term/ retirement care ($M = 2.12, SD = 0.81$) were less likely to agree that resource and staffing adequacy were present in the practice environment compared with those working in primary care ($M = 2.42, SD = 0.87$) and other workplaces ($M = 2.54, SD = 0.87$). Respondents in hospitals ($M = 2.69, SD = 0.69$) were also the least likely to agree that a nursing philosophy for quality care was present in the practice environment.

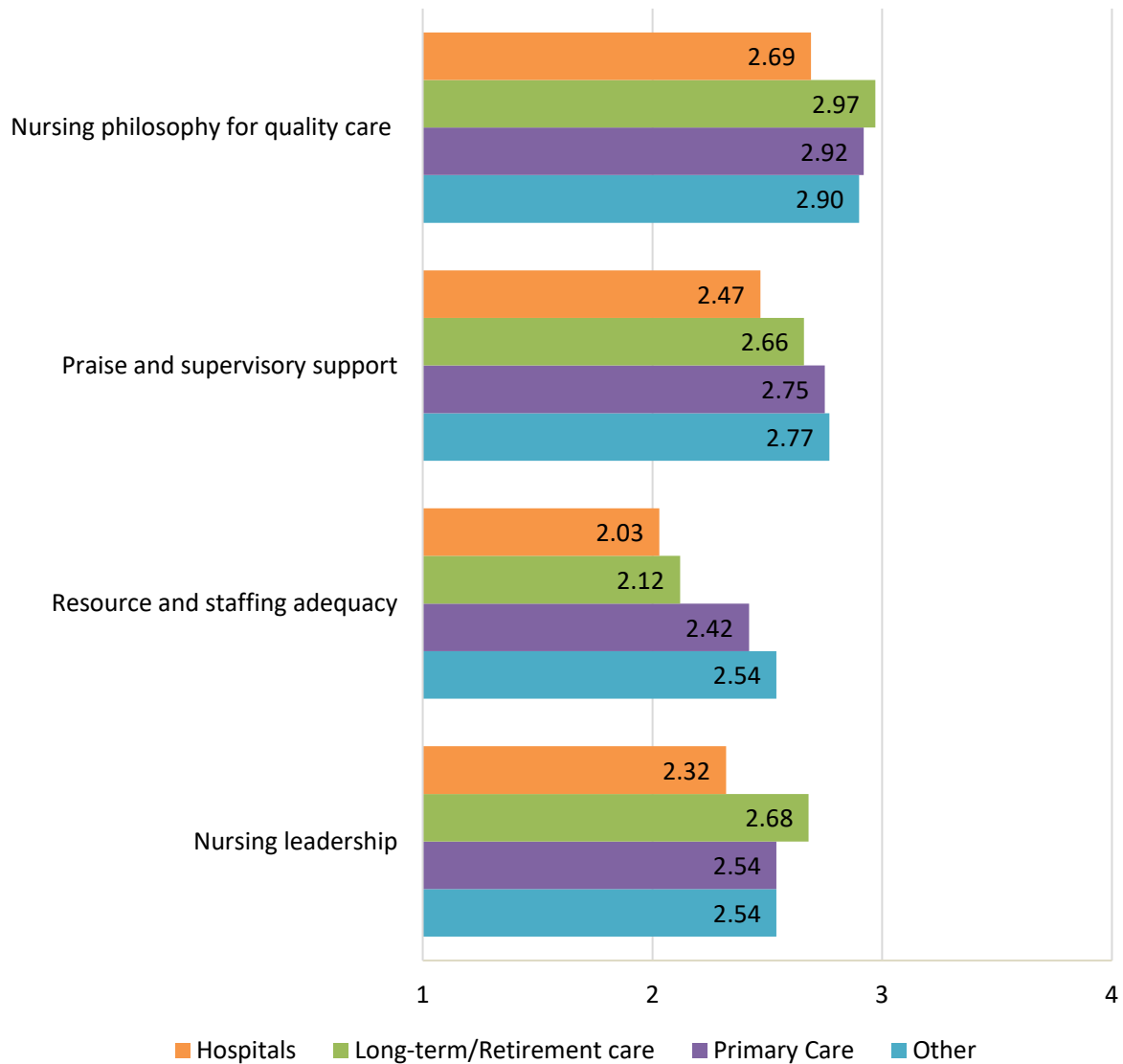


Figure 27. PES subscale mean scores by main workplace.

Workplace conditions

Psychosocial workplace conditions and general health were measured using the Copenhagen Psychosocial Questionnaire Version 3 (COPSOQ-III).⁽¹³⁾ Higher scores (range: 0 – 100) indicated greater demand (cognitive, emotional, workload and pace), clarity, conflict, work-life balance or general health.

Workplace demands

On average, respondents reported often having a high level of cognitive ($M = 77.7$, $SD = 20.7$) and emotional demand ($M = 67.9$, $SD = 22.4$) at work, and often working at a fast pace ($M = 73.2$, $SD = 22.8$). Respondents reported, on average, sometimes having high quantitative demands ($M = 53.9$, $SD = 19.7$). Workplace demands were also compared across workplaces. Respondents working in hospitals reported the highest level of work pace demand ($M = 78.5$, $SD = 19.6$) and cognitive demand ($M = 82.0$, $SD = 17.4$) and emotional demand ($M = 72.2$, $SD = 19.8$) compared to all other workplaces (Figure 28).

Six in ten respondents ($n = 1967$, 57.9%) reported that over the past year, their organization has limited staff vacation time to assist with coping with the demand at their workplace.

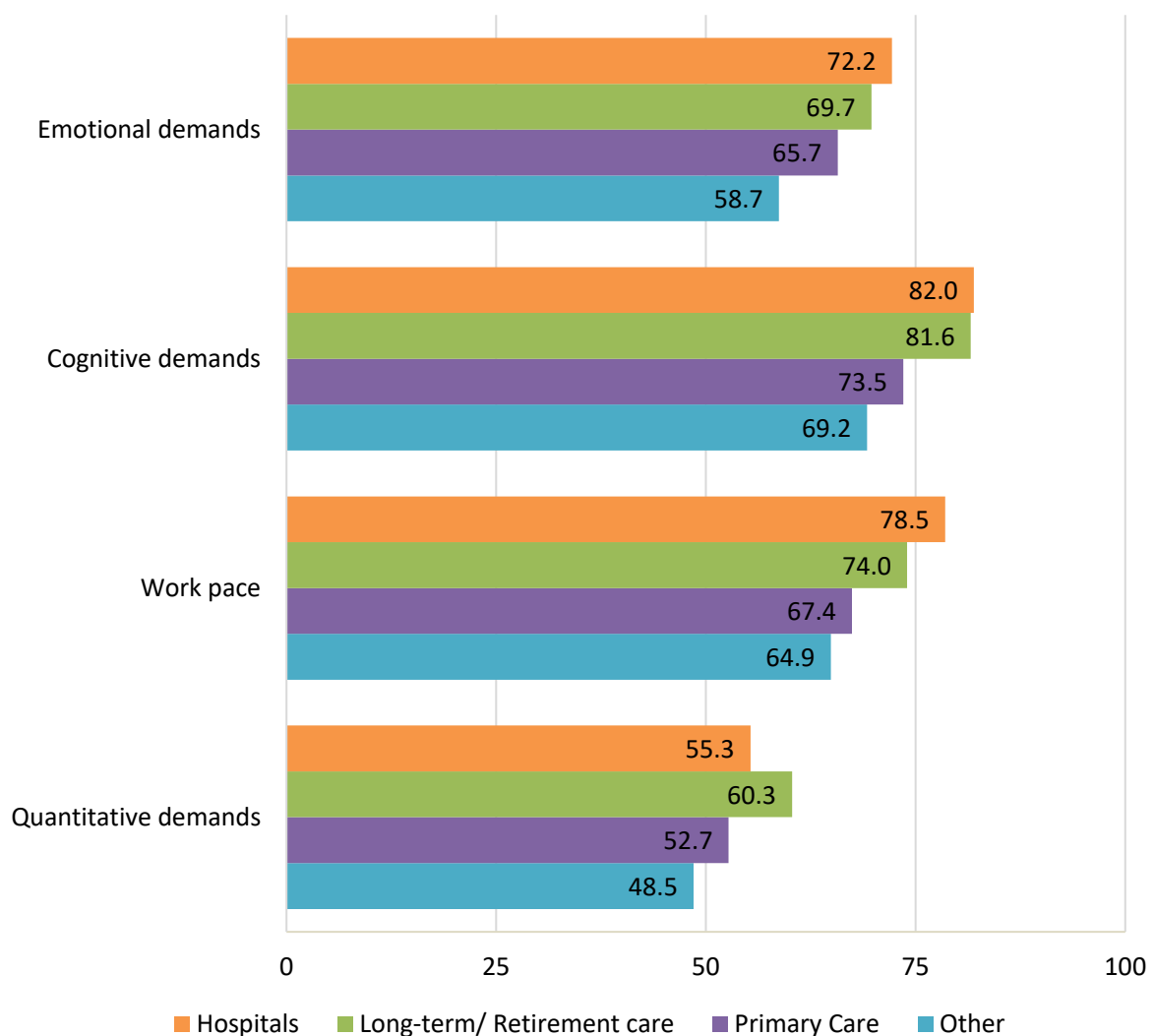


Figure 28. COPSOQ-III workplace demand mean scores by main workplace.

Role clarity and conflict, and work-life conflict

Respondents were asked to a series of questions that measured levels of role clarity, role conflict and work-life conflict (Figure 29). Overall, respondents expressed a high level of role clarity ($M = 70.3, SD = 20.1$). This equated to an experience of having role clarity to a large extent (score = 75) within their role. Respondents had moderate levels of role conflict ($M = 51.8, SD = 27.7$) equating to a moderate extent (score = 50) within their role.

A moderate level of work life conflict ($M = 60.2, SD = 31.2$) was reported by all respondents equating to experiencing work life conflict somewhere between a moderate (score = 50) and a large extent (score = 75). Work life conflict was highest for respondents working in long-term / retirement care ($M = 66.1, SD = 28.9$) followed by hospitals ($M = 65.0, SD = 28.8$).

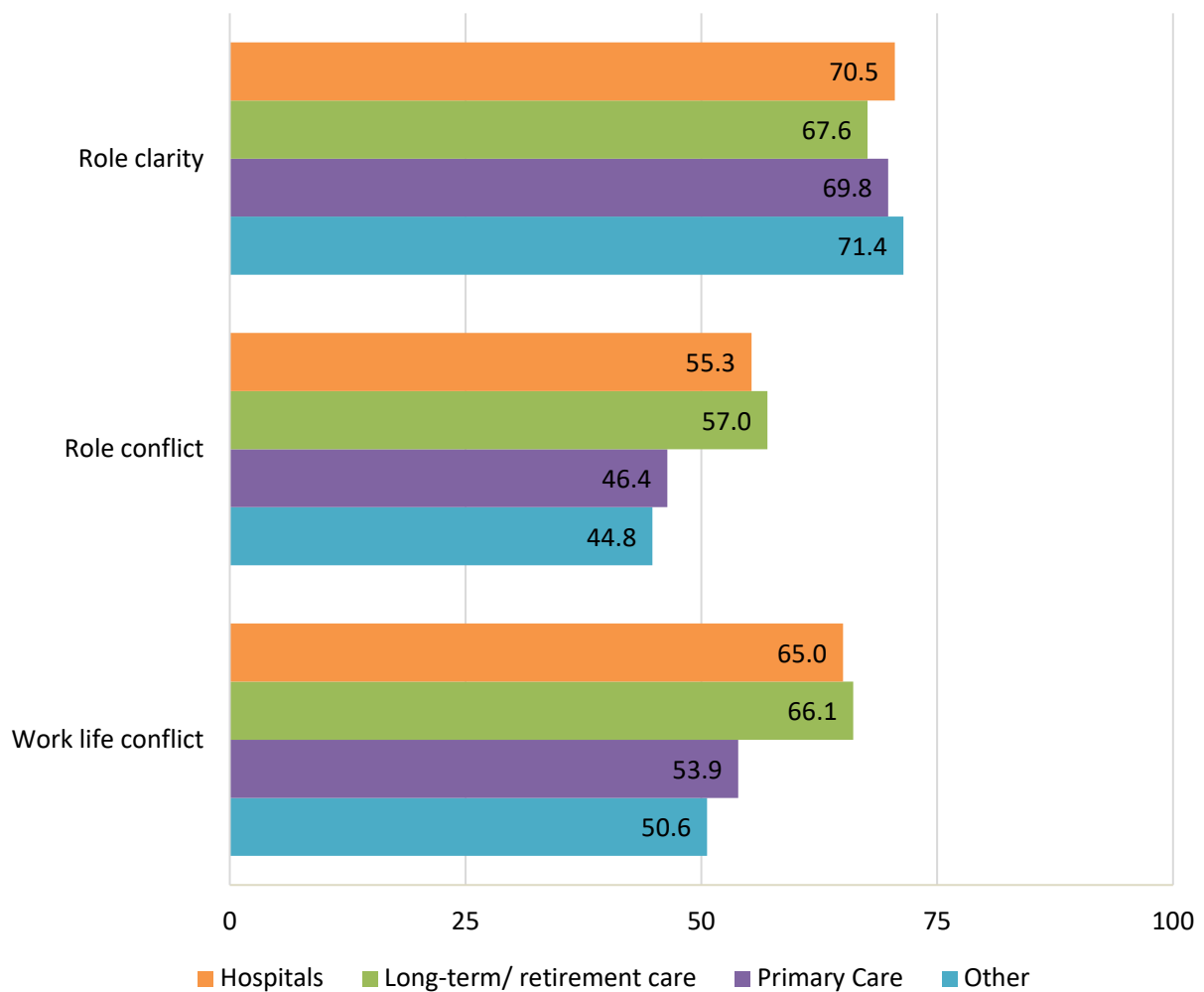


Figure 29. COPSOQ-III role clarity, role conflict, and work life conflict mean scores by main workplace.

Workplace scope of practice and education

Respondents were asked whether their employer had requested that they work outside of their usual scope of practice. The majority of respondents ($n = 2275$, 72.9%) reported they were not asked to work outside of their scope of practice. Of the respondents who were asked to work outside of their scope of practice, two-thirds ($n = 543$, 67.9%) did not receive appropriate education or training to work in the role.

When respondents were asked if they trained staff to advance their scope of practice for the pandemic (i.e., to work in a different clinical area should this be required), one-third of respondents ($n = 876$, 32.2%) responded they had.

Workplace redeployment

Fewer than twenty percent of respondents ($n = 493$, 14.9%) reported being redeployed to a different geographic area, long-term care, or other speciality of work due to COVID-19. Of the respondents who were redeployed, approximately half ($n = 234$, 47.9%) reported they had not received any education or training for that position.

Respondents who were redeployed were asked to which area, hospital, or specialty of work they were redeployed (Figure 30). Most commonly respondents were redeployed to intensive care or long term care / retirement facilities (35.4%).

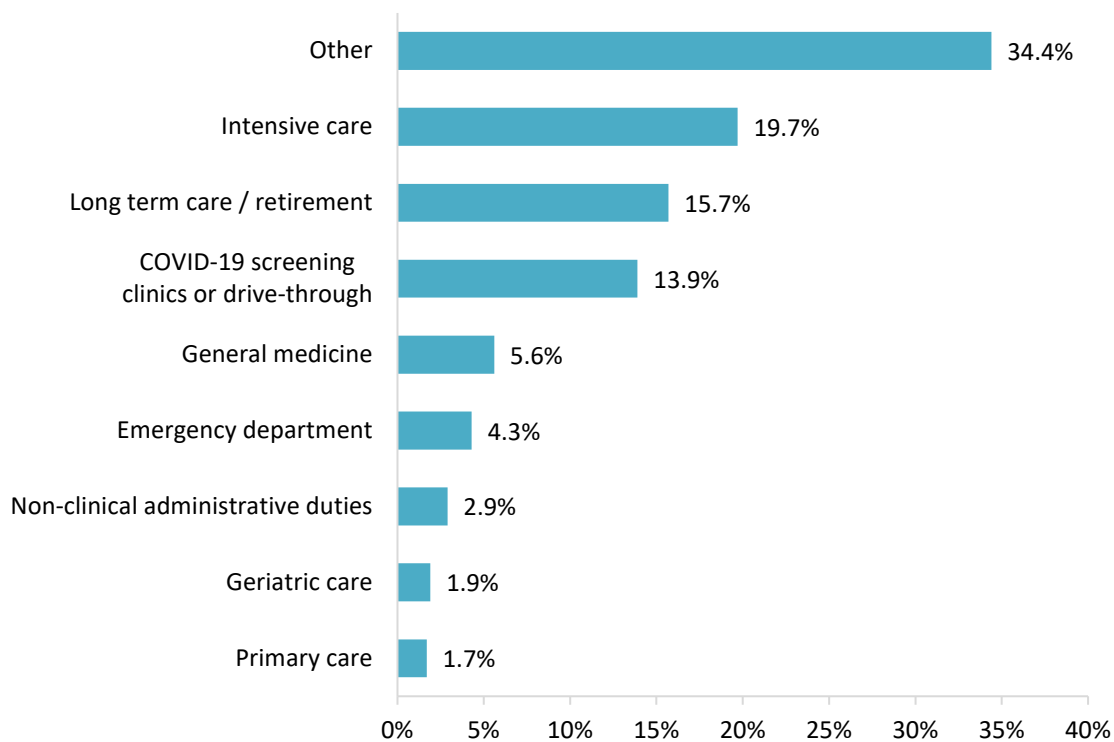


Figure 30. Re-deployment areas for those respondents who were re-deployed ($n = 483$).

From the respondents, 57.9% ($n = 1967$) reported that over the past year, their organization has limited staff vacation time to assist with coping with the demand at their workplace. Almost two-thirds of respondents, ($n = 2096$, 64.6%) took less vacation time than they were entitled to, half of

the respondents ($n= 1091$, 52.6%) voluntarily reduced their vacation time. Almost two-thirds of respondents ($n= 684$, 64.2%) did not agree to a request to voluntarily reduce vacation days and ($n= 646$, 66.6%) reported that they were mandated to reduce their vacation time off (Figure 31).

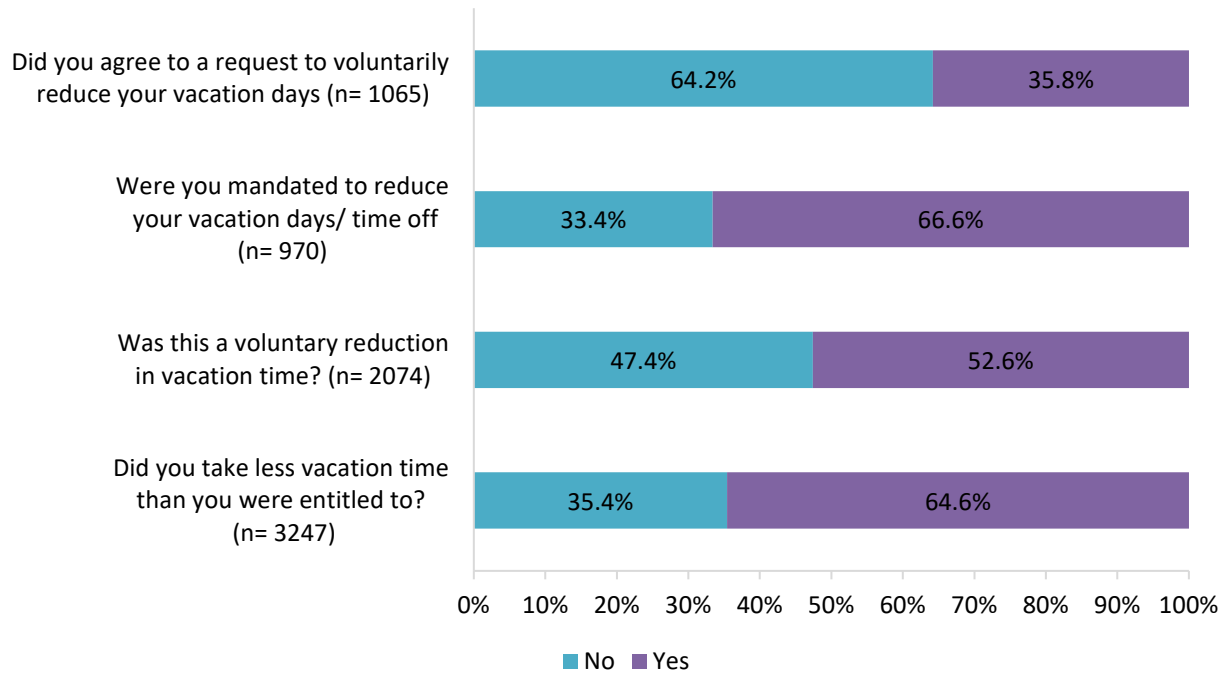


Figure 31. Vacation time responses from respondents.

Personal protective equipment availability and policies

Respondents were asked a series of questions regarding personal protective equipment (PPE) at their primary workplace (Figure 32). At the time of the survey, most respondents reported that they often or always had the right types of PPE ($n = 2746$, 90.7%), had the right size of PPE ($n = 2611$, 87.7%), and sufficient supplies of PPE ($n = 2597$, 86.1%).

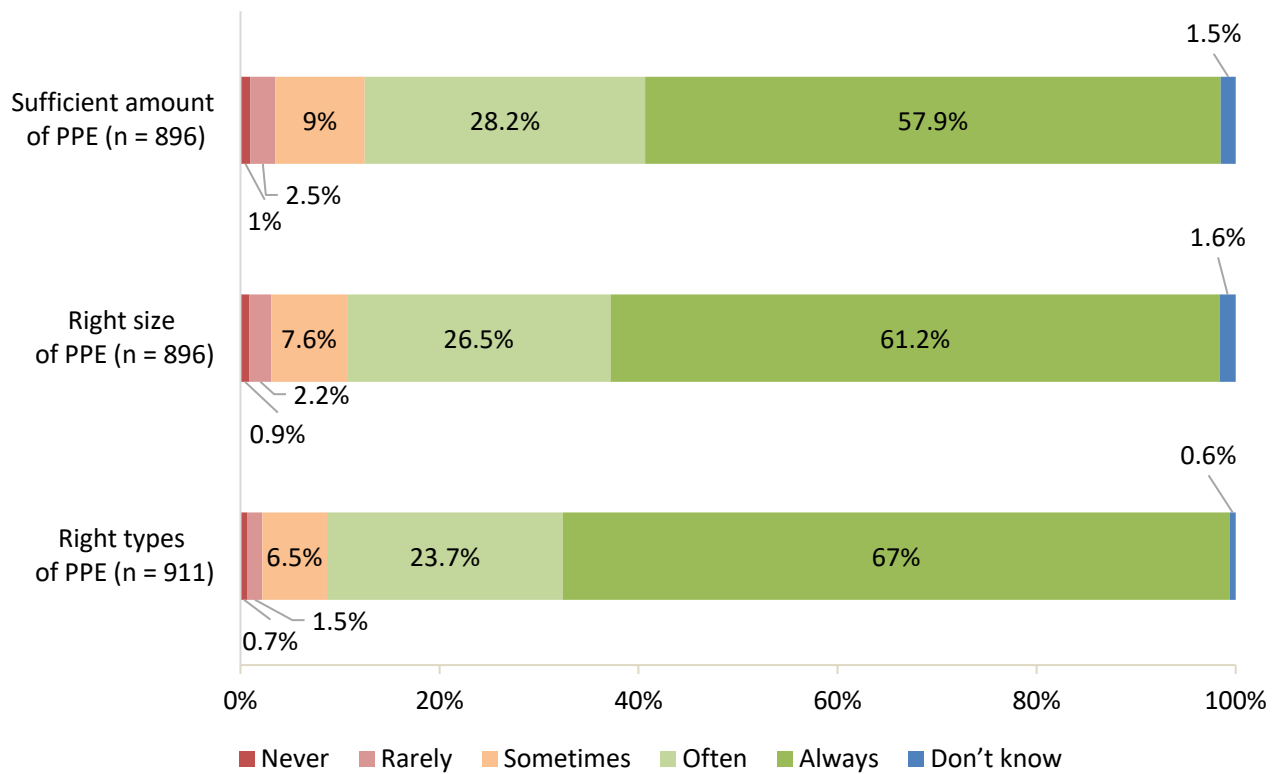


Figure 32. PPE size, type, and availability at primary workplace of respondents.

Respondents were also asked about PPE policies and processes at their workplace (Figure 33). Approximately one-third of respondents indicated that their workplace did not have a policy for breaks while working in full PPE (i.e., gloves, mask / N95 respirator, gown as minimum; $n = 769$, 28.7%). Furthermore, approximately four in ten respondents indicated that the PPE policy and process did not include respirator fit checking every time PPE is used ($n = 1182$, 41.6%).

There was also a relatively large proportion of respondents who did not know if their organisation had a policy for breaks while working in full PPE ($n = 789$) or have a policy and process for respirator fit checking ($n = 590$).

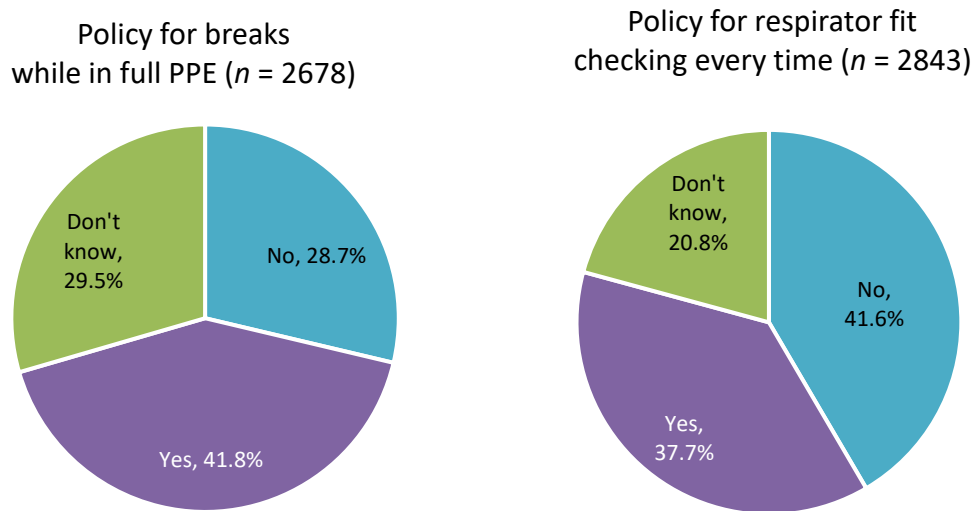


Figure 33. Policies and processes for breaks while in full PPE and respirator fit checking every time PPE is used as indicated by respondents.

Personal protective equipment reuse

Respondents were asked if they had ever had to reuse any single-use, disposable PPE (Figure 34). Of those who responded, 21.6% reported they had not reused single-use PPE. Hospital workers were more frequently reported having to re-use PPE (85.0%). The most frequently reported single use PPE were face shields (60.8%), masks (56.1%), and glasses/goggles (49.4%).

Close to a third of respondents (32.3%) had reported PPE concerns to their employer. Of those, 61.4% felt supported by their workplace regarding their PPE concerns and requirements.

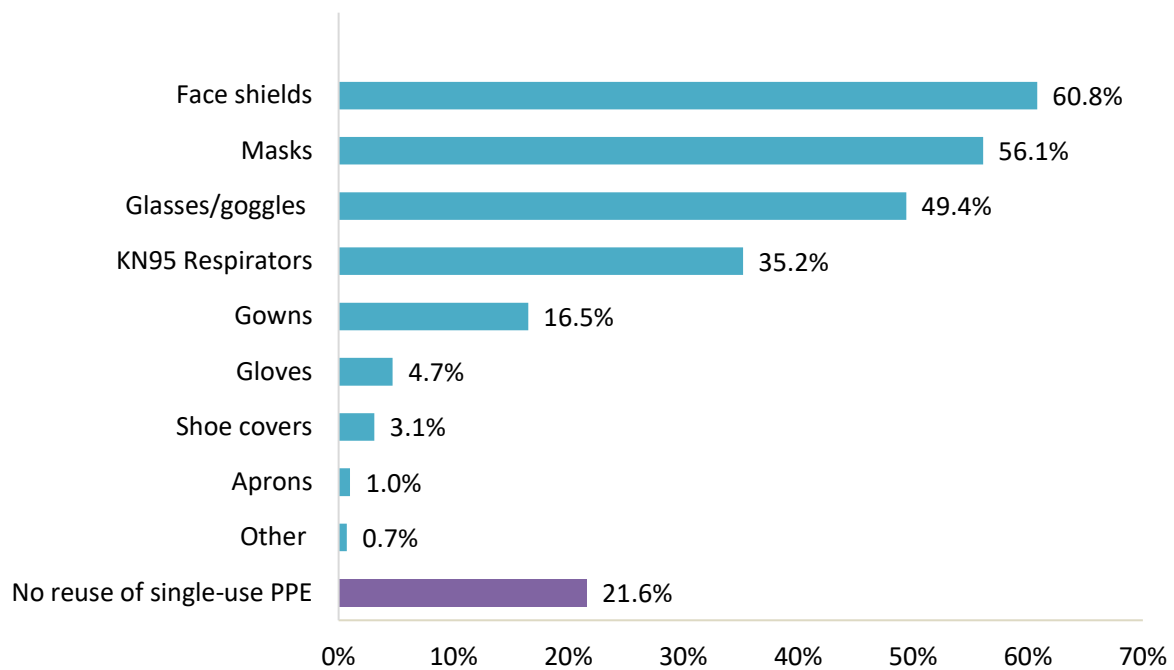


Figure 34. Reuse of single-use, disposable PPE for all respondents

Note. multiple choice question. Sum greater than 100%.

Personal protective equipment support and training

Respondents were asked about the workplace support and training they had received regarding PPE use (Figure 35). The majority of respondents agreed or strongly agreed that the PPE training they received had equipped them to practice safely during the pandemic ($n = 1989$, 67.3%), and that they were supported by their workplace regarding PPE concerns and requirements ($n = 1836$, 61.4%). Just under one-third of respondents ($n = 611$, 23.1%) disagreed or strongly disagreed that there were adequate resources and staff to deliver high quality PPE training.

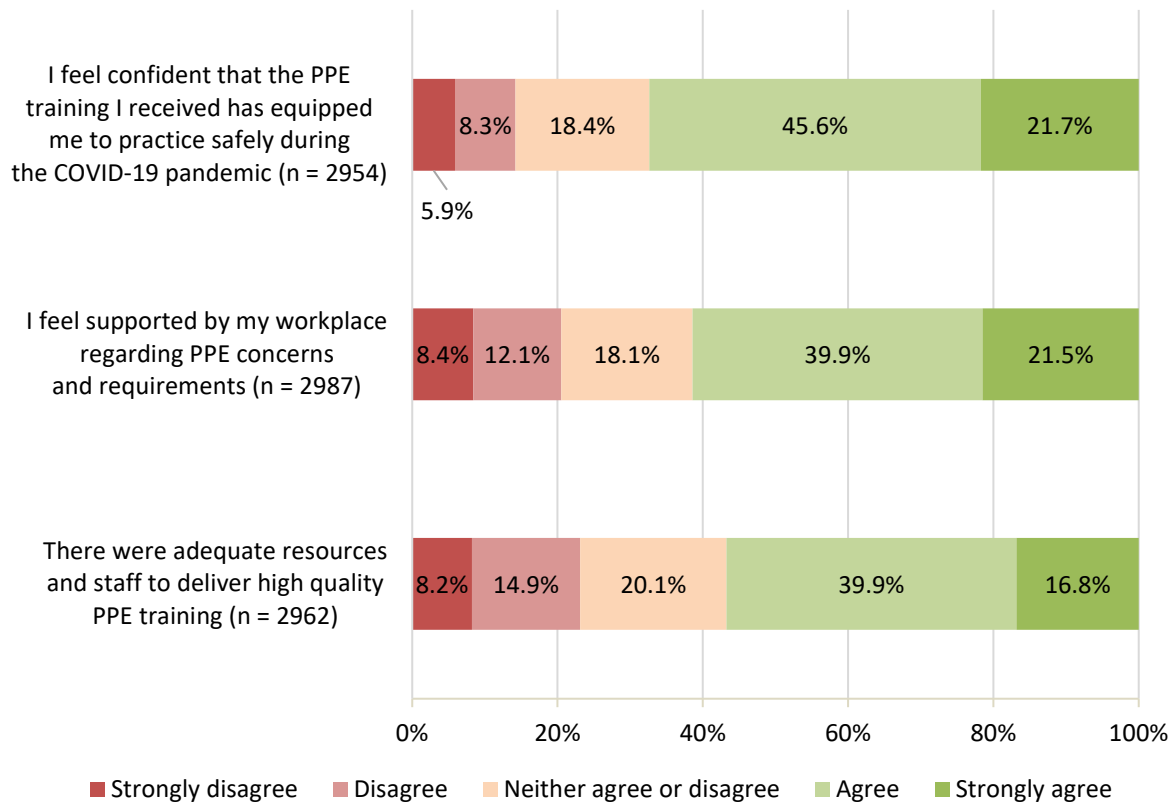


Figure 35. Perceptions of PPE training and support received among respondents.

Staff testing for COVID-19

At the time of the survey, 21.9% ($n = 799$) of respondents had been tested for COVID-19 in the preceding four weeks (Figure 36). The mean number of times respondents had been tested was 4.76 ($SD = 4.6$). Most respondents ($n = 3386$, 93.7%) reported that they have been vaccinated for COVID-19.

The majority of the respondents reported not having ever tested positive for COVID-19 ($n = 89.5$, 3203). Ten percent (10.2%, $n = 365$) of respondents had tested positive for COVID-19 and $n = 9$ were awaiting testing results. When those who tested positive were asked if they thought they may have contracted COVID-19 through workplace exposure, just under half ($n = 142$, 48.6%) believed that they had and 13.7% ($n = 40$) were unsure. Over half ($n = 187$, 56.2%) of those who had tested positive also indicated that they had experienced work-related distress associated with their test result (e.g., stigma for being COVID-19 positive, sense of letting colleagues down).

Missed work due to the pandemic

Nearly two-thirds of respondents ($n = 3011$, 64.2%) indicated that they had missed days of work due to reasons associated with COVID-19. Of those that reported they had missed days of work because of COVID-19 (Figure 37), the most common reason for missing work was because they were showing symptoms of COVID-19 followed by contact with known or suspected cases and due to being screened for COVID-19. There was also a large proportion who reported other reasons related to family matters (e.g., no school) or mental health reasons.

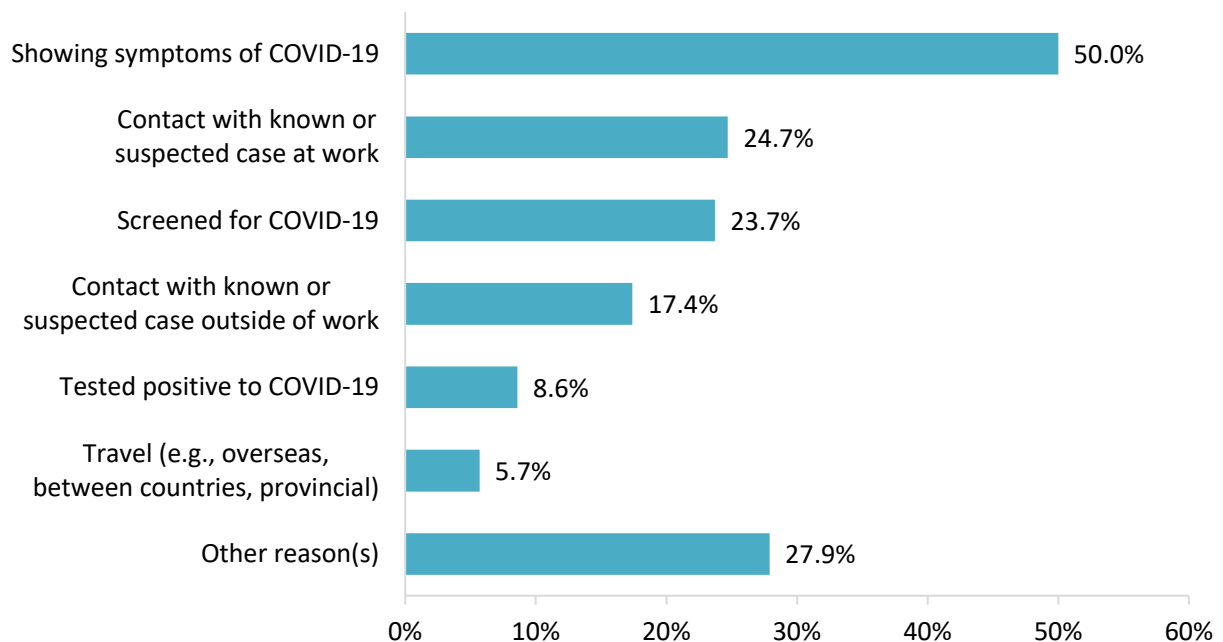


Figure 36. COVID-19 associated reasons for missing days of work among respondents ($n = 3011$). Note. Multiple responses allowed; percentage sum to more than 100%.

Respondents were also asked what type of leave they took to cover their missed days (Figure 38). The most common leave type taken was workplace paid sick leave, followed by leave without pay and personal/sick leave.

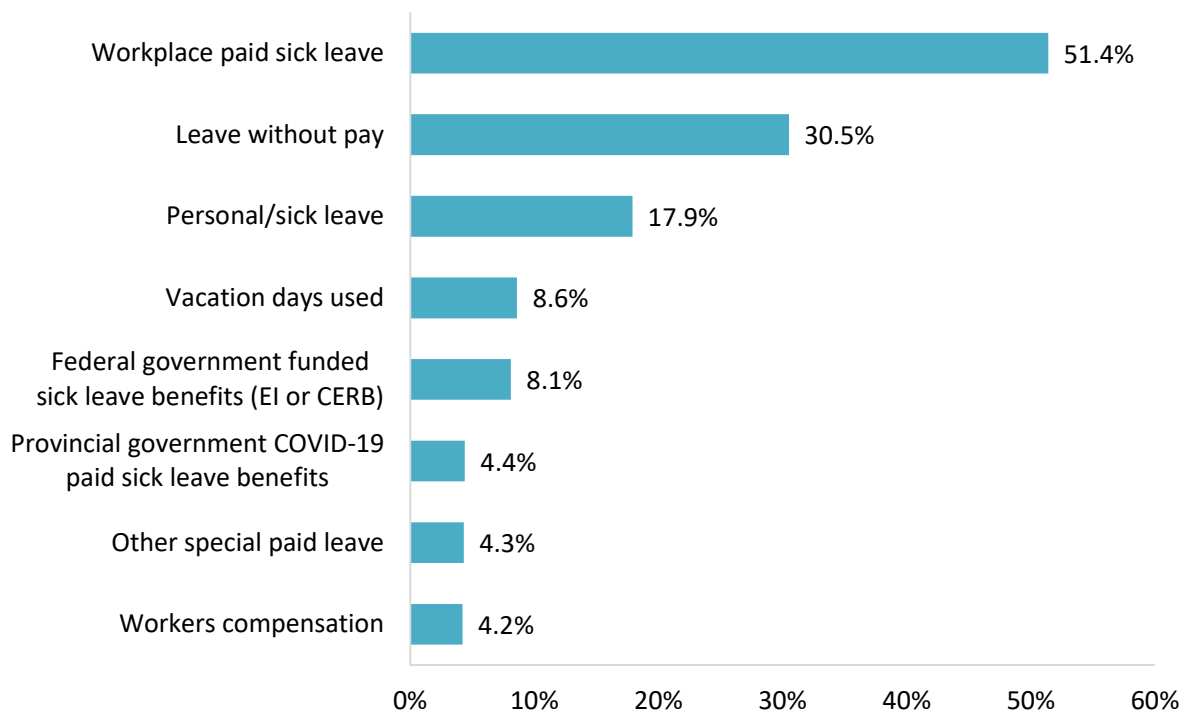


Figure 37. Type of leave taken by respondents who missed days due to COVID-19.

Note. Multiple responses allowed; percentage sum to more than 100%.

Job satisfaction

Job satisfaction was assessed using a modified version of the McCloskey/Mueller Satisfaction Scale (MMSS).⁽¹⁴⁾ Respondents indicated their satisfaction with leadership and career opportunities, work and scheduling flexibility, extrinsic rewards, and collegial relationships. A higher score (range: 1 – 5) indicated greater satisfaction with the aspect of work. Overall, respondents indicated some satisfaction with collegial relationships ($M = 3.45$, $SD = 1.00$) and work and scheduling flexibility within their workplace ($M = 3.25$, $SD = 1.16$). In contrast, respondents expressed some dissatisfaction with leadership and career opportunities ($M = 2.79$, $SD = 1.08$) and extrinsic rewards ($M = 2.99$, $SD = 1.22$).

Job satisfaction was investigated according to workplace groups (Figure 39). Respondents working in “other” types of workplaces reported the greatest satisfaction with leadership and career opportunities ($M = 2.95$, $SD = 1.14$) and collegial relationships ($M = 3.50$, $SD = 1.05$). In contrast, the remaining workplace groups expressed some dissatisfaction with leadership and career opportunities. Respondents working in hospitals indicated the lowest satisfaction with extrinsic rewards ($M = 2.80$, $SD = 1.18$) and work and scheduling flexibility ($M = 3.00$, $SD = 1.12$) compared with other workplace groups.

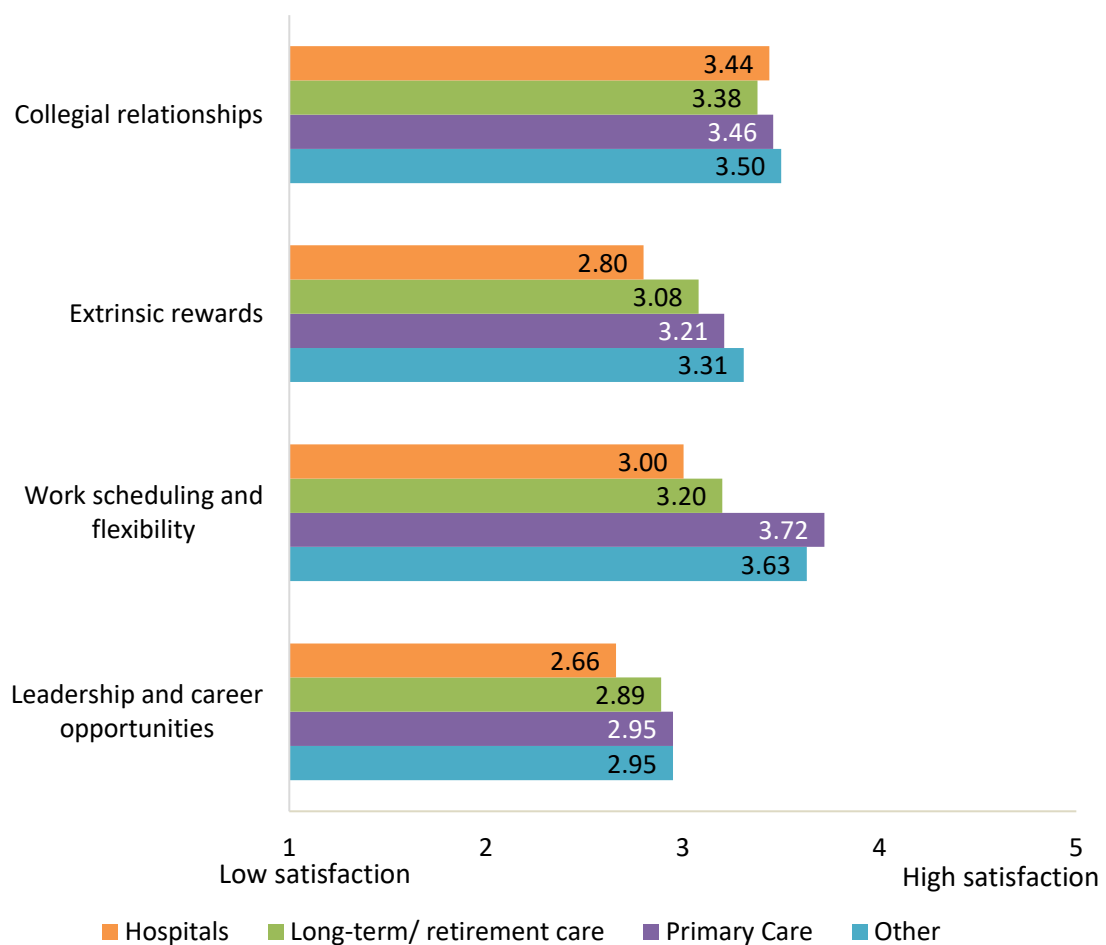


Figure 38. MMSS subscale mean scores by main workplace.

Work engagement

Work engagement was measured using the brief version of the Utrecht Work Engagement Scale (UWES-9).⁽¹⁵⁾ Higher subscale scores (range 0 – 6) indicate greater frequency of feeling vigour, dedication, and absorption within their work. On average, respondents reported feeling dedication ($M = 3.86$, $SD = 1.30$) and absorption ($M = 3.41$, $SD = 1.25$) often within their role, approximately once per week. Vigour ($M = 2.89$, $SD = 1.44$) was experienced sometimes, approximately a few times per month. Workplace comparisons showed that those working in hospitals less frequently felt engagement with work, with the lowest scores on absorption and vigour compared to other sectors (Figure 40).

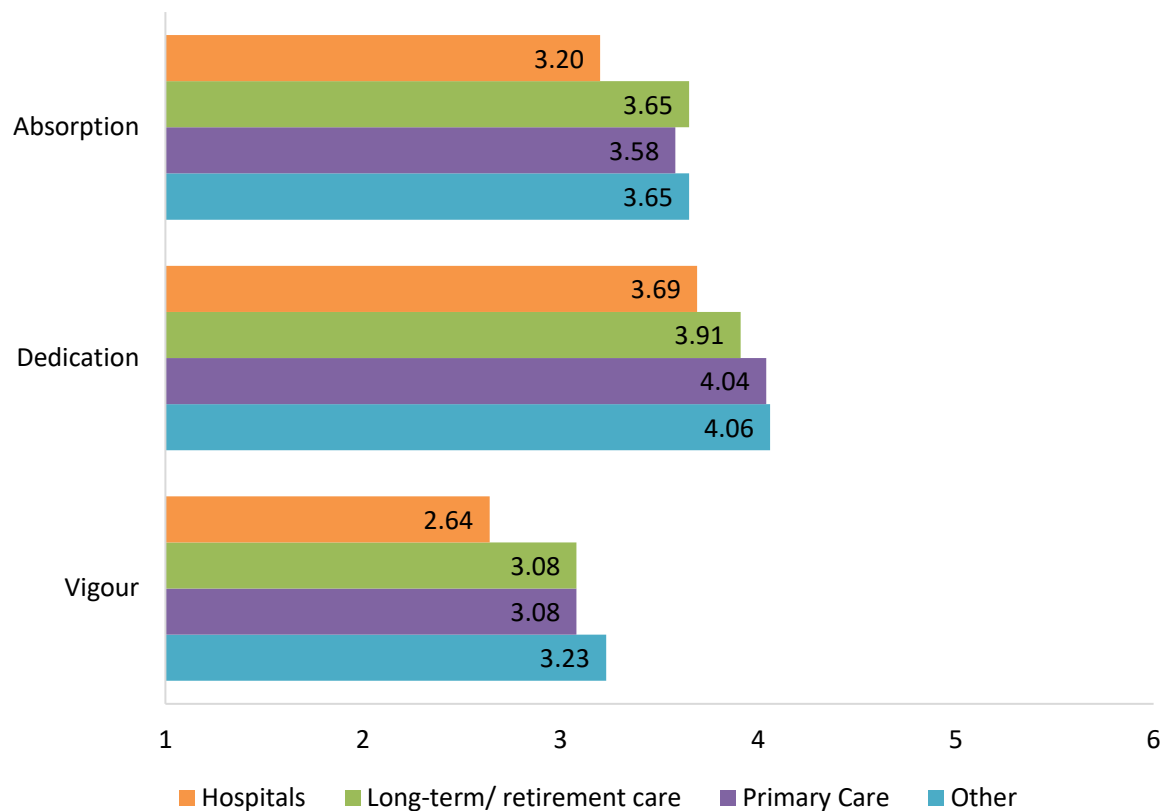


Figure 39. UWES-9 subscale mean scores by main workplace.

Burnout

Job-related burnout was assessed using the Oldenburg Burnout Inventory (OLBI).⁽¹⁶⁾ The OLBI is designed to measure exhaustion (i.e., level of emotional, cognitive, and physical strain) and disengagement (i.e., negative attitudes and level of disconnection from work; score range 1 – 4). The measure is job-related, but not occupationally specific, therefore items did not address working with people specifically. Overall, respondents indicated slightly higher levels of exhaustion ($M = 2.76$, $SD = 0.56$) than disengagement ($M = 2.51$, $SD = 0.56$). More than two-thirds of respondents were burnt out (Table 10).

Table 10. Distribution of Burnout results for respondents

Classification	<i>n</i>	%
Normal	327	11.4
Exhausted	247	8.6
Disengaged	131	4.6
Burnt out	2153	75.3

The OLBI burnout dimensions were also investigated according to main workplace category (Figure 41). Exhaustion subscale scores were higher for respondents working in hospitals ($M = 2.87$, $SD = 0.51$) compared to other work sectors. Respondents from “other” workplaces reported the lowest exhaustion ($M = 2.58$, $SD = 0.59$). Disengagement was highest among respondents working in hospitals ($M = 2.59$, $SD = 0.53$) and long-term/ retirement care ($M = 2.54$, $SD = 0.53$), followed by primary care ($M = 2.41$, $SD = 0.57$) and those working in “other” workplaces ($M = 2.37$, $SD = 0.58$).

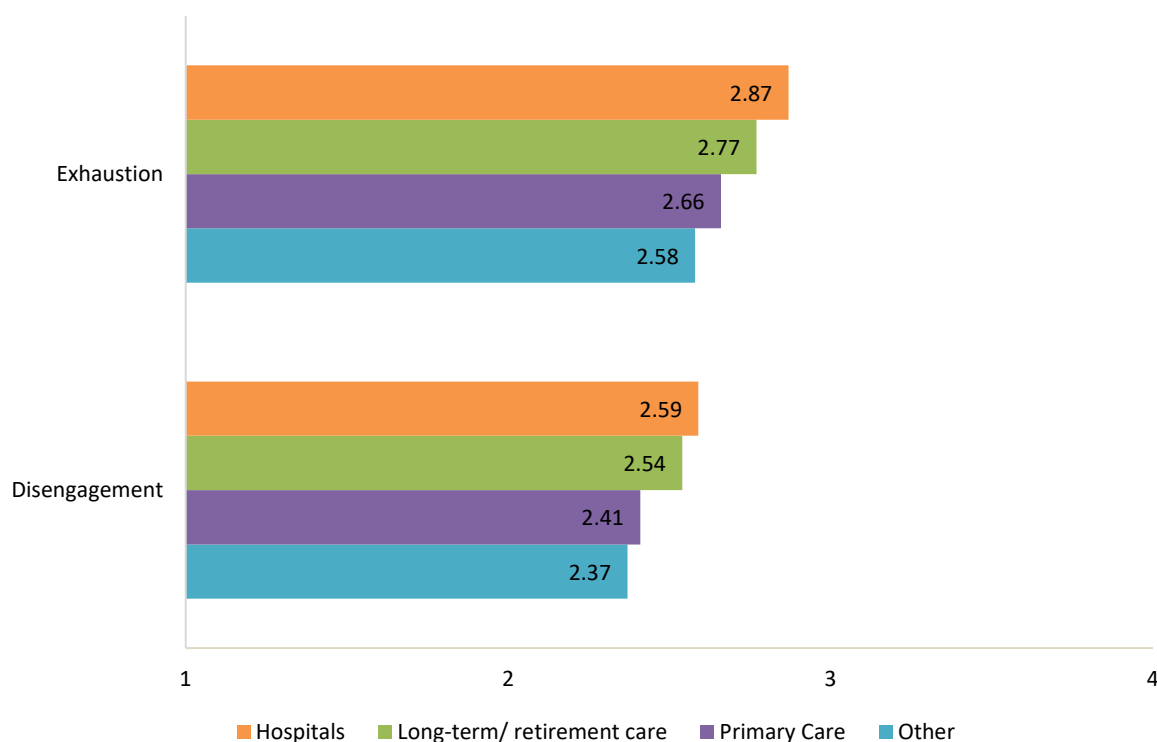


Figure 40. OLBI subscale mean scores by main workplace

Intentions to leave

Respondents were asked whether they were planning on leaving their current position (Figure 42). More than two-thirds (68.6%) planned to leave their current position either within the next year or next one to five years.

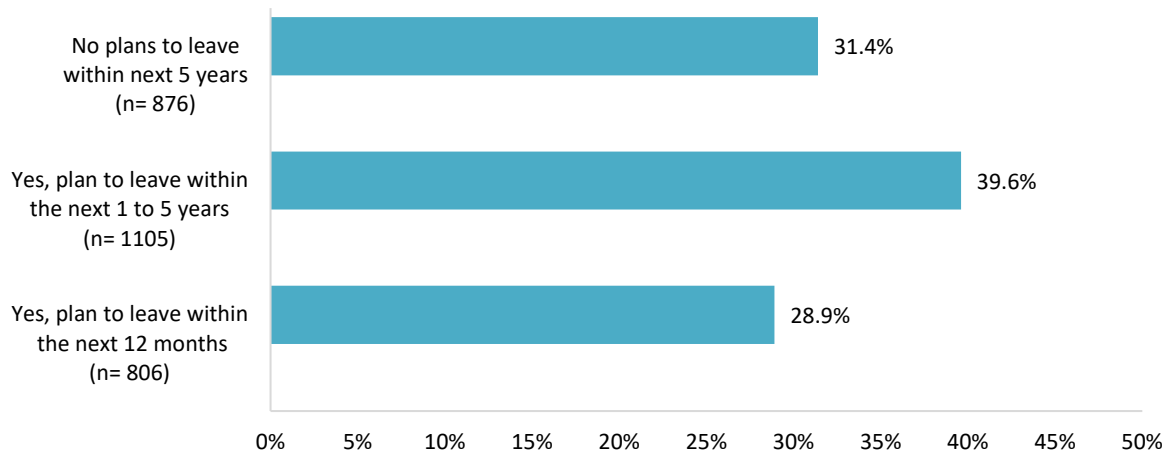


Figure 41. Responses regarding intentions to leave current position ($n = 2787$)

Of those who planned to leave, almost one-third of respondents (32.3%) stated they did not plan on exiting nursing to work in another field, 25.7% ($n = 489$) were undecided, 29.4% plan to retire, while 12.6% ($n = 240$) have a plan to exit nursing to work in another field.

Those who planned to leave their current role within the next one to five years but were not planning to retire, were also asked how likely they were to leave the profession after the pandemic (Figure 42). A total of 43.8% reported that they were not at all likely to leave the profession. Nineteen percent were moderately or very likely to leave their current role also reported being moderately to very linkely to leave the profession.

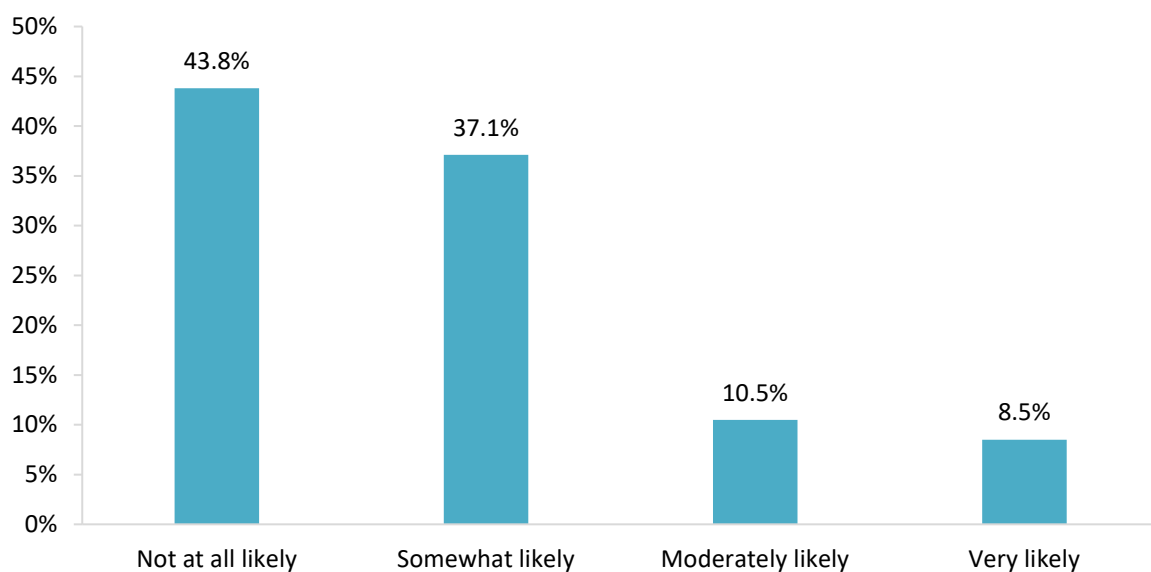


Figure 42. Responses regarding leaving nursing for another occupation after the pandemic ($n = 749$)

Respondents were also asked to indicate what incentives would encourage them to stay in nursing (Figure 43). The most frequently selected options related to improving the working conditions for nurses including; better workplace supports (73.2%), reduced workload (67.9%), and ability to adjust work schedule (62.5%).

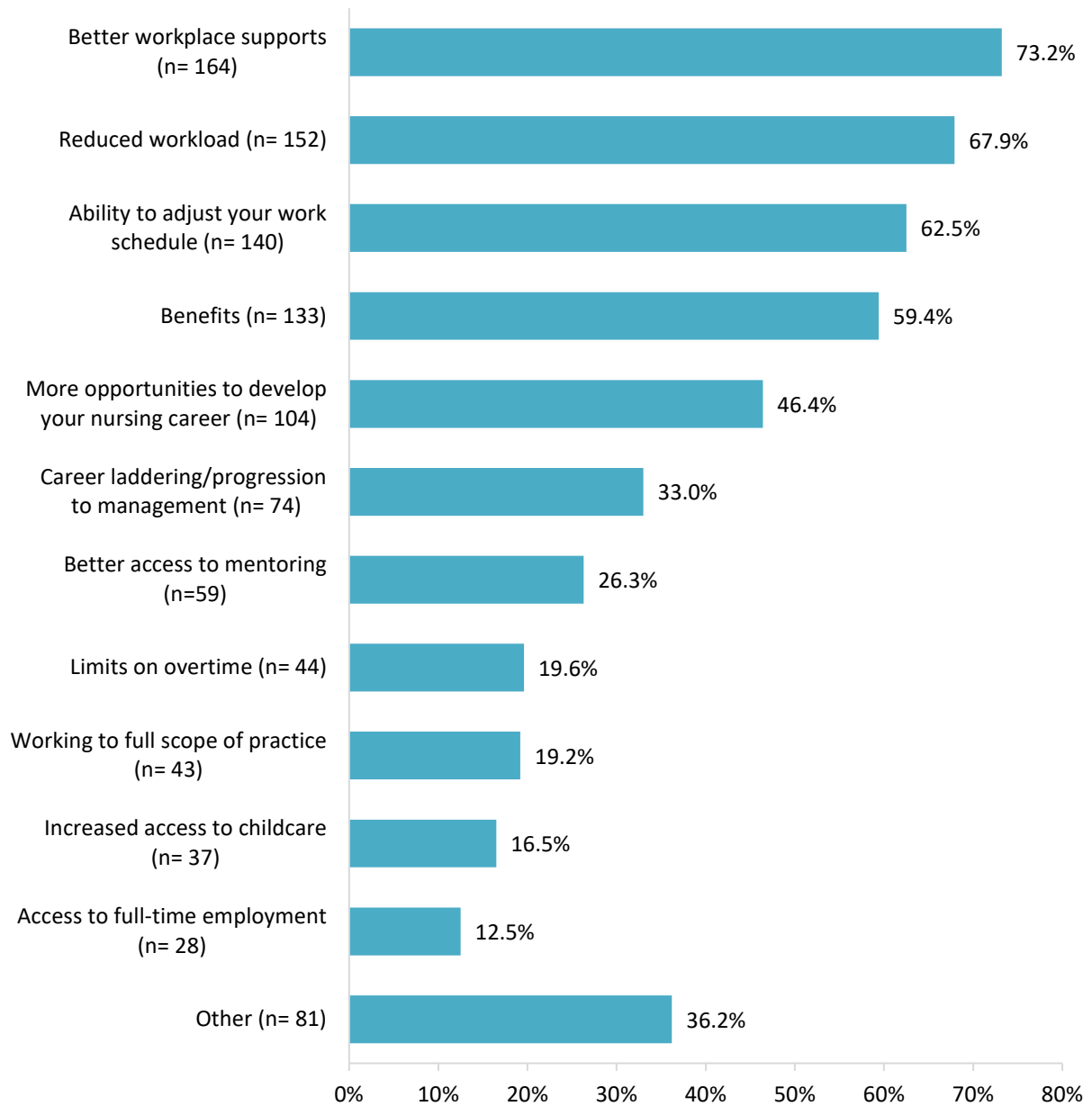


Figure 43. Incentives to stay in current employment (*n* = 224).
 Note. Multiple responses allowed.

Retirement

Respondents were asked when they were eligible to retire. A large proportion (64.2%) stated that they were not eligible to retire within the next five years, one in five (20.0%) were eligible now and 15.8% were eligible within the next five years. Respondents were also asked for reasons to defer their retirement (Figure 44).

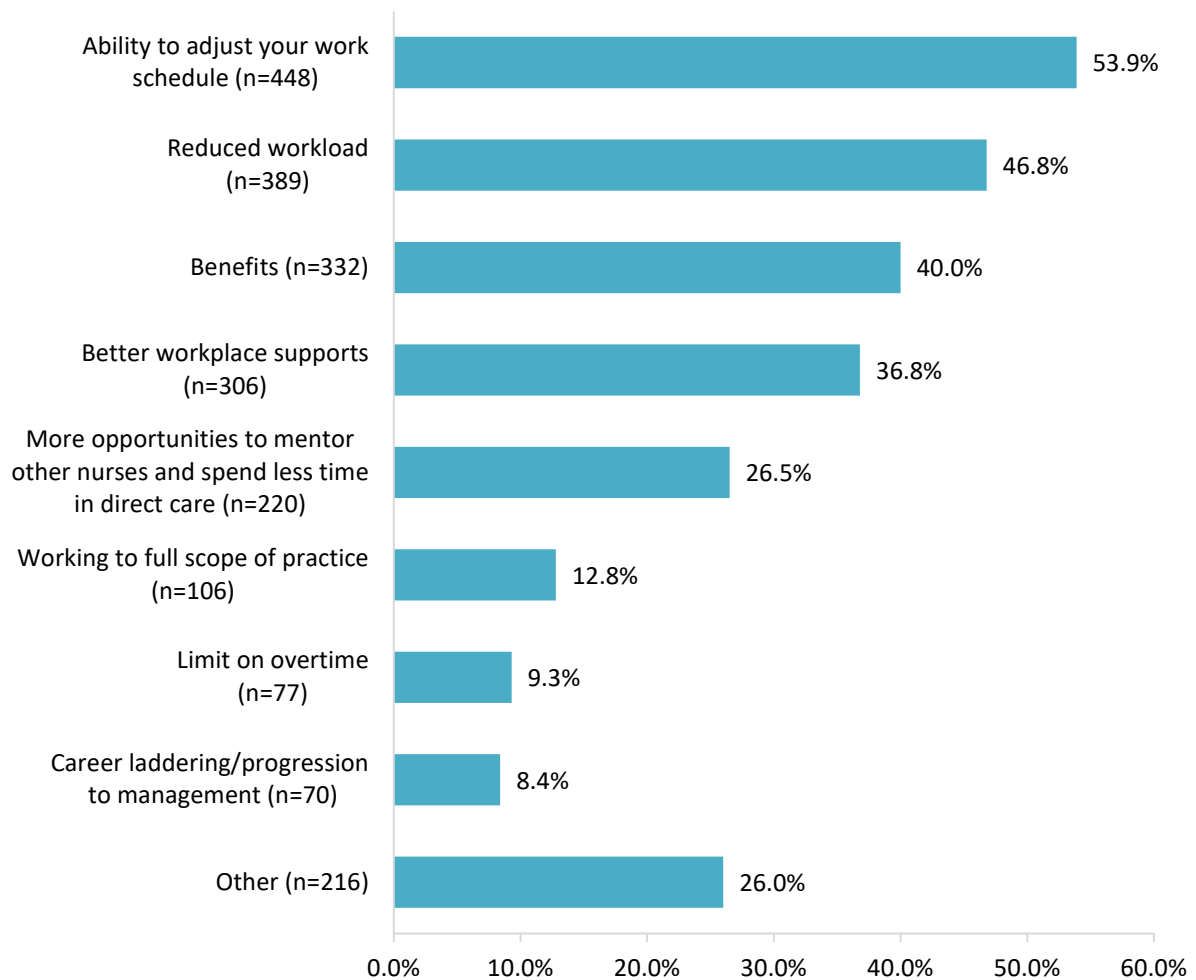


Figure 44. Initiatives to support preference to defer retirement ($n= 423$).
Note. Multiple responses allowed.

Nurse wellbeing and access to support

Physical health concerns

Participants were asked how concerned they were about risks to their physical health given their work role and COVID-19 both at the beginning of the pandemic and currently (i.e., at the time of completing the survey). At the beginning of the pandemic, 38.9% ($n = 1412$) of respondents were not at all or only slightly concerned about risks to physical health due to their work role and 24.1% ($n = 875$) were extremely concerned. Concerns for physical health were lower at the time of the survey, with 55.7% ($n = 2014$) of respondents not at all or only slightly concerned about risks to physical health due to their work role at the time of the survey, and 7.3% ($n = 263$) of respondents were extremely concerned at the time of the survey (Figure 45).



Figure 45. Concern about risks to physical health at the start of the pandemic and currently.

Mental health concerns

Participants were also asked how concerned they were about risks to their mental health given their work role and COVID-19 both at the beginning of the pandemic and at the time of completing the survey. At the beginning of the pandemic, approximately half ($n = 1980$, 54.9%) of respondents were not at all or only slightly concerned about risks to mental health due to their work role and 29.0% were moderately or extremely concerned (Figure 46).

Concern for mental health appeared to increase at the time of the survey; 35.9% ($n = 1300$) of respondents were not at all or only slightly concerned about risks to mental health due to their work role and COVID-19 at the time of the survey, while 42.8% of respondents were moderately or extremely concerned at the time of the survey.

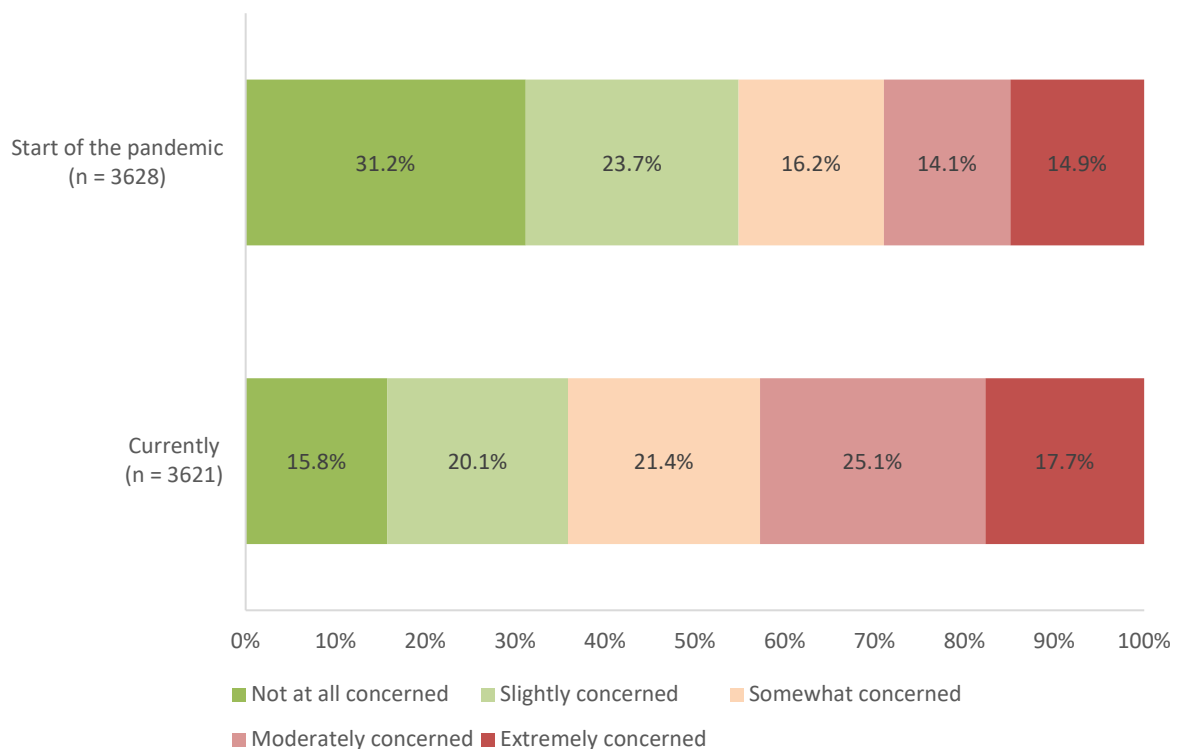


Figure 46. Concern about risks to mental health at the start of the pandemic and currently.

Concerns about home life because of COVID-19

Respondents were asked to indicate their level of concern when responding to a series of statements related to impacts on their home life (Figure 47). At the individual level, half of respondents ($n = 1801$; 51.8%) indicated that they were moderately or extremely concerned about their own psychological wellbeing. This was greater than the proportion that were moderately or extremely concerned with their own personal health and safety ($n = 1222$, 35%). On a family level, more than half of the respondents ($n = 1832$, 54.2%) were moderately or extremely concerned with keeping their family or the people they lived with safe. Other significant concerns for respondents because of COVID-19 were risk to vulnerable family members and managing the personal needs of family/people they live with. Experiencing financial hardship and partners losing work/hours were not as notable concerns for respondents.

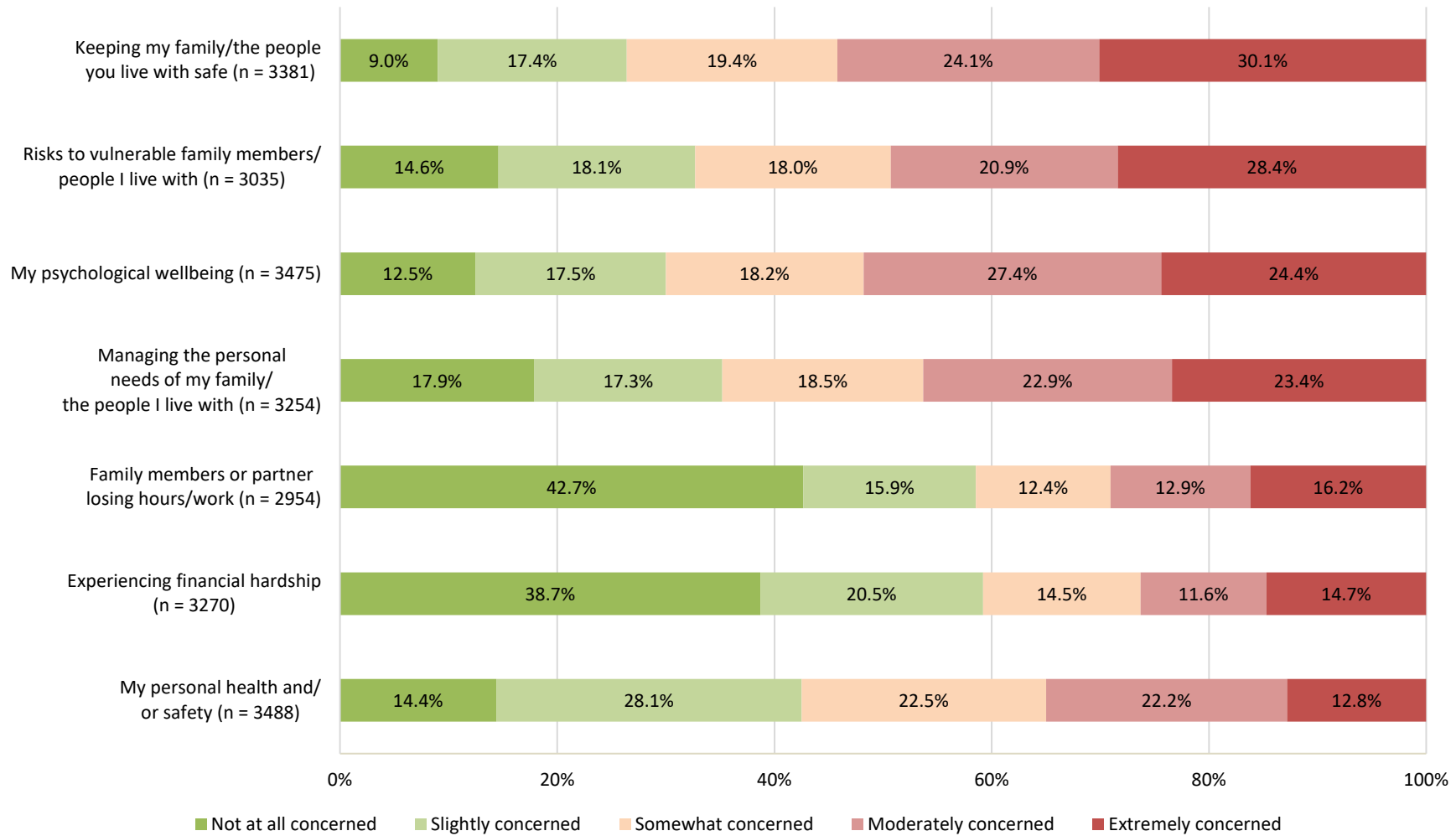


Figure 47. Current personal concerns because of COVID-19 among all respondents. Note. For each item, those who selected 'Not applicable' were excluded from the analysis.

Self-isolation and accommodation

Respondents were asked questions regarding self-isolation and accommodation during the pandemic. One-quarter of respondents ($n = 863$, 25%) chose to isolate from those people they lived with. Of those, the majority ($n = 762$, 89.1%) isolated in their own residence. Of the 10.9% ($n = 92$) who isolated in an alternative accommodation, more than half (paid for it themselves and another third indicated that no payment was required (Figure 48).

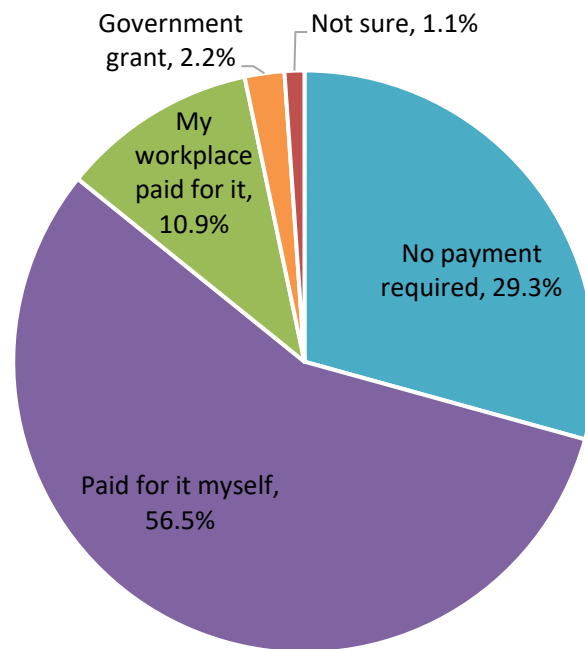


Figure 48. Source of payment for alternative accommodation of respondents ($n = 92$).

Resilience

Resilience was measured using the Brief Resilience Scale (BRS).(17) Scores below 3 indicate low resilience, 3 to 4.3 average resilience, and scores greater than 4.3 high resilience.(18) The mean score overall was 3.40 (SD = 0.77). Mean scores across work sectors indicate that resilience was slightly above average with primary care and those working in other sectors having the highest levels of resilience (Figure 49).

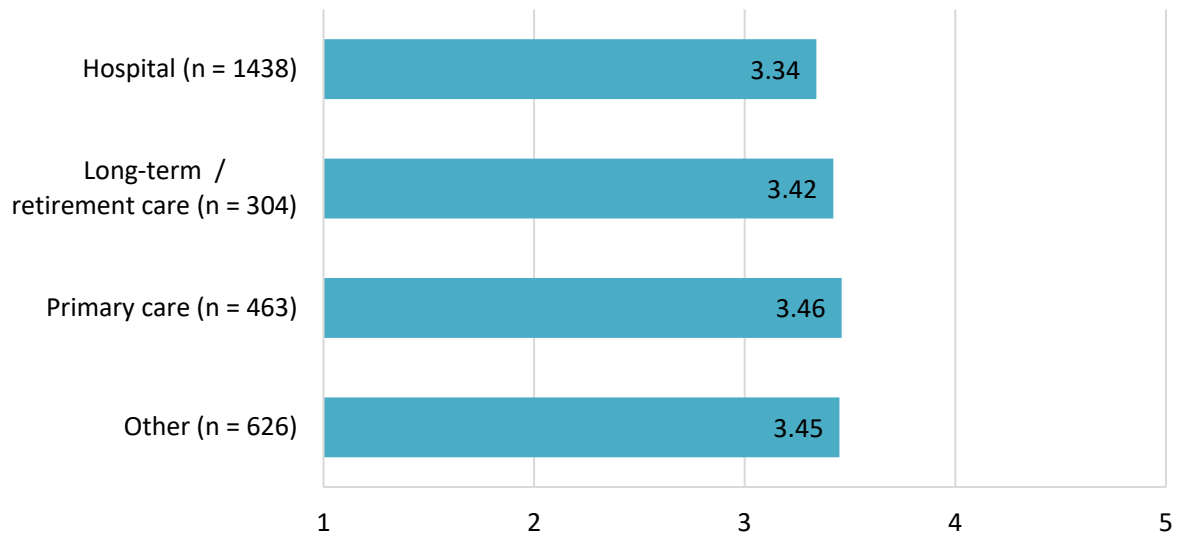


Figure 49. Resilience scores across the four work sectors.

General health

Respondents were asked to assess their health over the past four weeks (Figure 50). Most respondents rated their health positively, indicating that their health was excellent, very good or good ($n = 2146$, 72.4%). Approximately one quarter of respondents assessed their health as fair or poor ($n = 816$, 27.5%). Results suggest that nurses working in other settings were tended to rate their general health as better than those working in hospitals, long-term / retirement care or primary care.

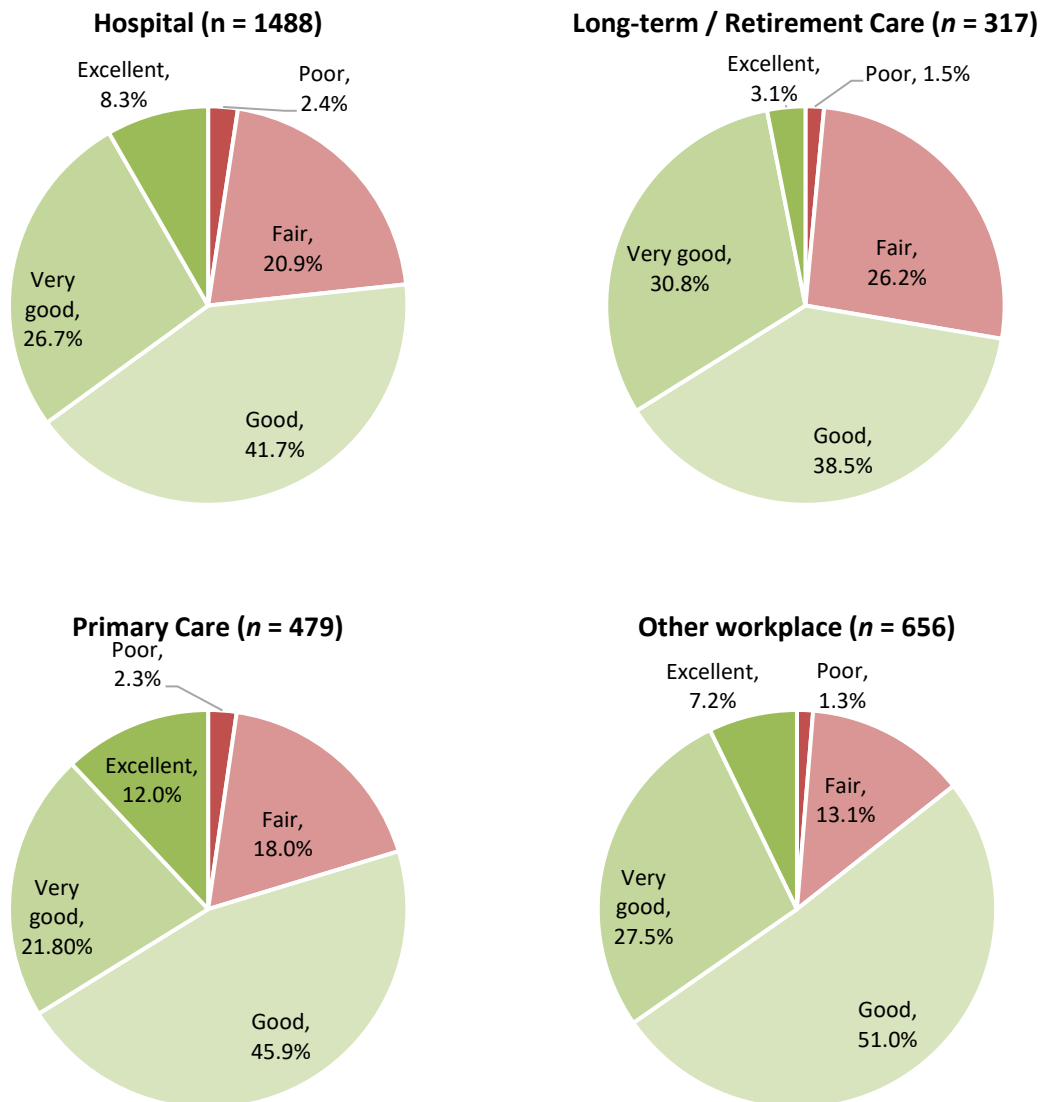


Figure 50. Self-rated health by main workplace.

Respondents were also asked whether they had any health conditions or risk factors prior to the pandemic that they felt put them at high risk for COVID-19 (Figure 51). One in five ($n = 1065$, 20.6%) of the 5,176 respondents indicated “yes”. Respondents who had a health condition or risk factor were then asked to select which condition(s) they had which put them at risk. Of the conditions selected by respondents, immunocompromised ($n = 267$) and over 65 years of age ($n = 216$) were the most frequently selected, followed by severe asthma ($n = 178$). A range of other conditions were also reported, including controlled hypertension, cardiac conditions, cancer, obesity, autoimmune conditions, allergies, asthma (not severe), lupus, myasthenia gravis and pregnancy. Of those who reported having a health condition or risk factor, the majority ($n = 922$, 87.3%) reported still going to work.

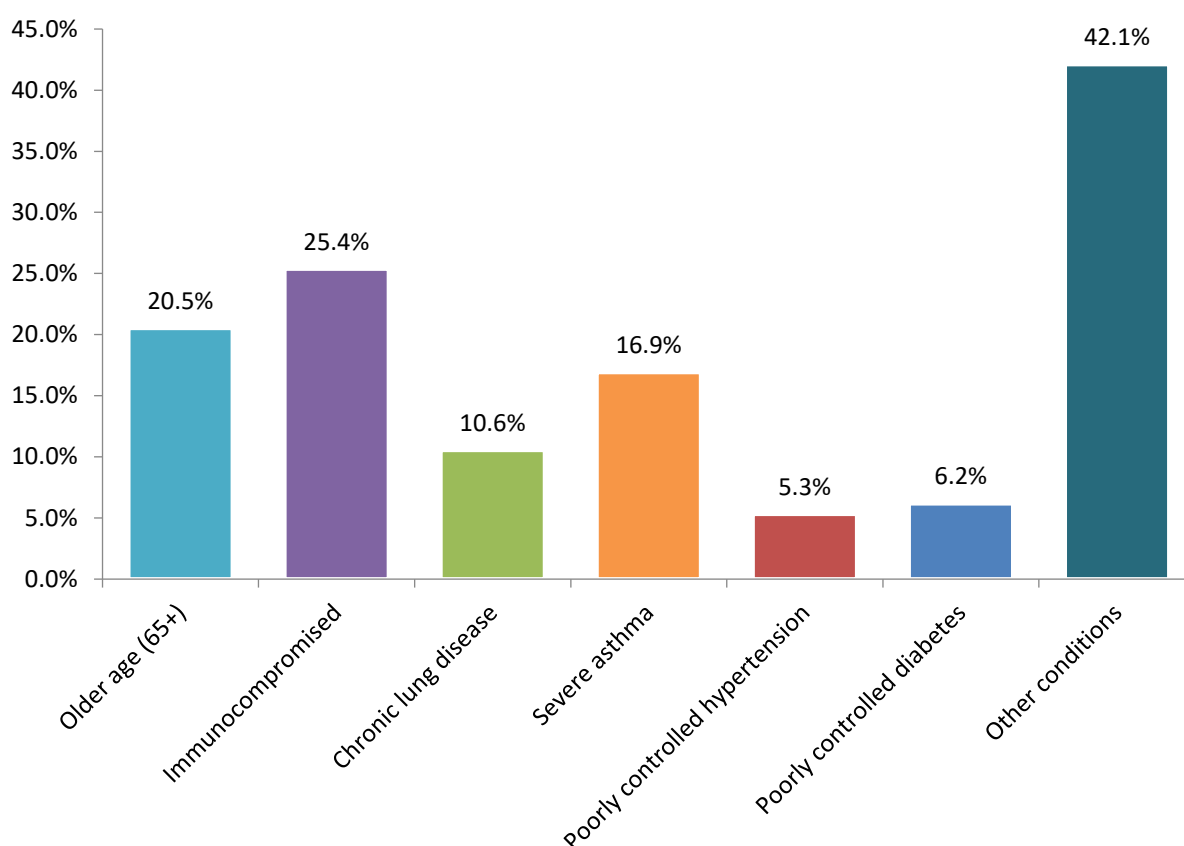


Figure 51. Conditions or risk factors for COVID-19 among respondents.

Note. Multiple responses allowed; percent sum greater than 100.

Self-rated health

Respondents were asked to assess their health over the past four weeks (Figure 52). A majority of respondents rated their health positively, indicating that their health was excellent ($n = 238, 8.0\%$), very good ($n = 767, 25.9\%$), or good ($n = 1141, 38.5\%$). Approximately one in five respondents assessed their health as fair ($n = 635, 21.4\%$).

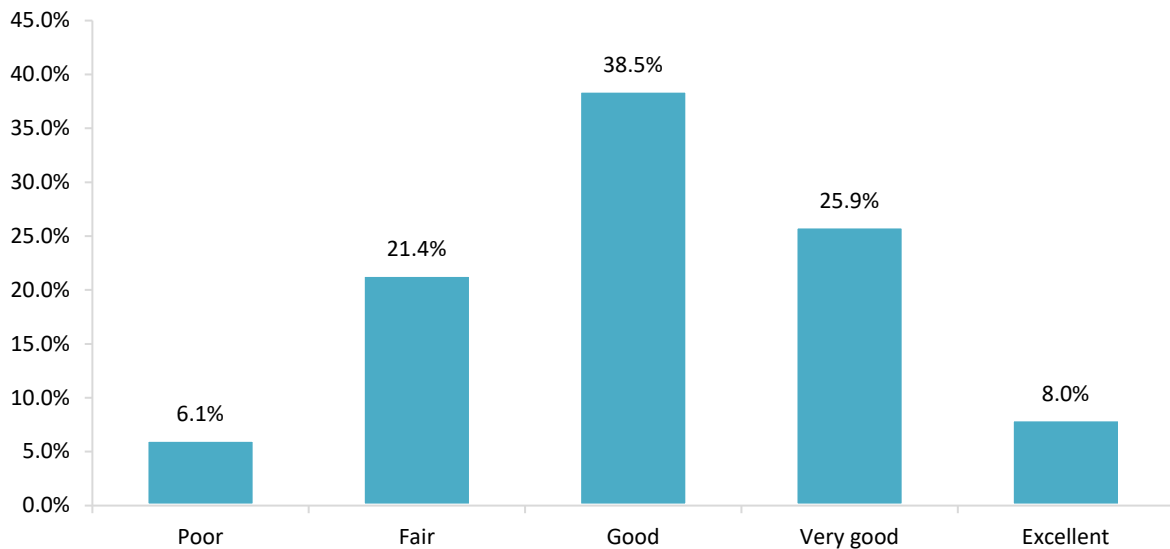


Figure 52. Self-rated health by respondents.

Depression, anxiety and stress

To assess mental health among respondents, the Depression Anxiety Stress Scales (DASS-21;(19) was used to measure self-reported depression, anxiety, and stress (Figure 53). Higher subscale scores (range: 0 – 42) indicate more severe symptoms of depression, anxiety, and stress. On average, respondents reported symptoms of depression ($M = 10.74, SD = 10.64$), anxiety ($M = 8.49, SD = 9.05$), and stress ($M = 13.86, SD = 10.08$) in the normal range.(20)

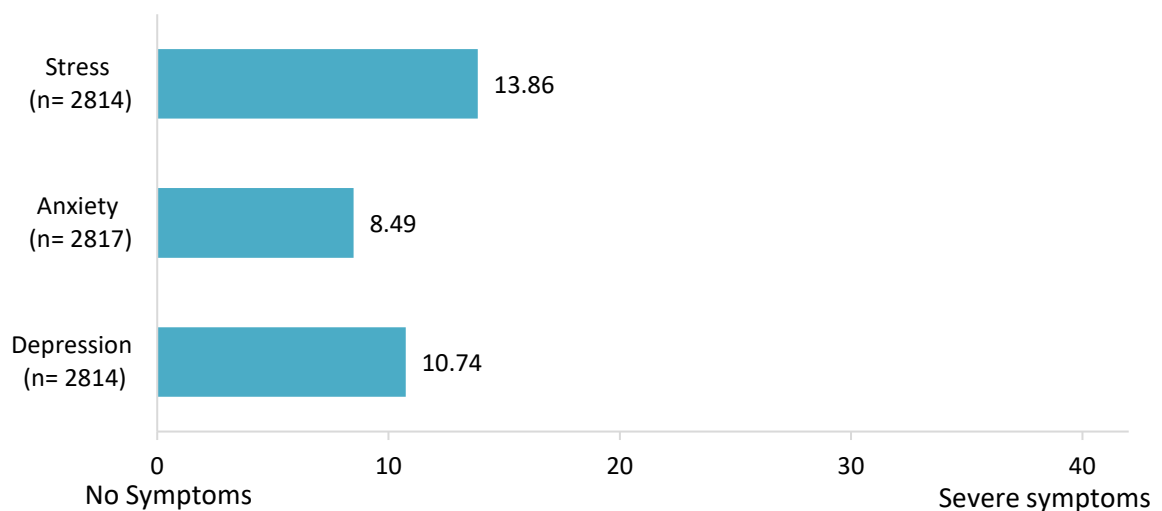


Figure 53. Depression, anxiety and stress mean scores.

DASS-21 scores were also analysed based on symptom severity cut-offs (Figure 54). As can be seen, all scales showed a significant right-skewed distribution. Patterns for depression and anxiety were quite similar across the distribution and there were greater proportions of people with extremely severe depression and anxiety compared with stress. In total, 33.1%, 36.1% and 28.5% had moderate, severe or extremely severe symptoms of depression, anxiety and stress respectively.

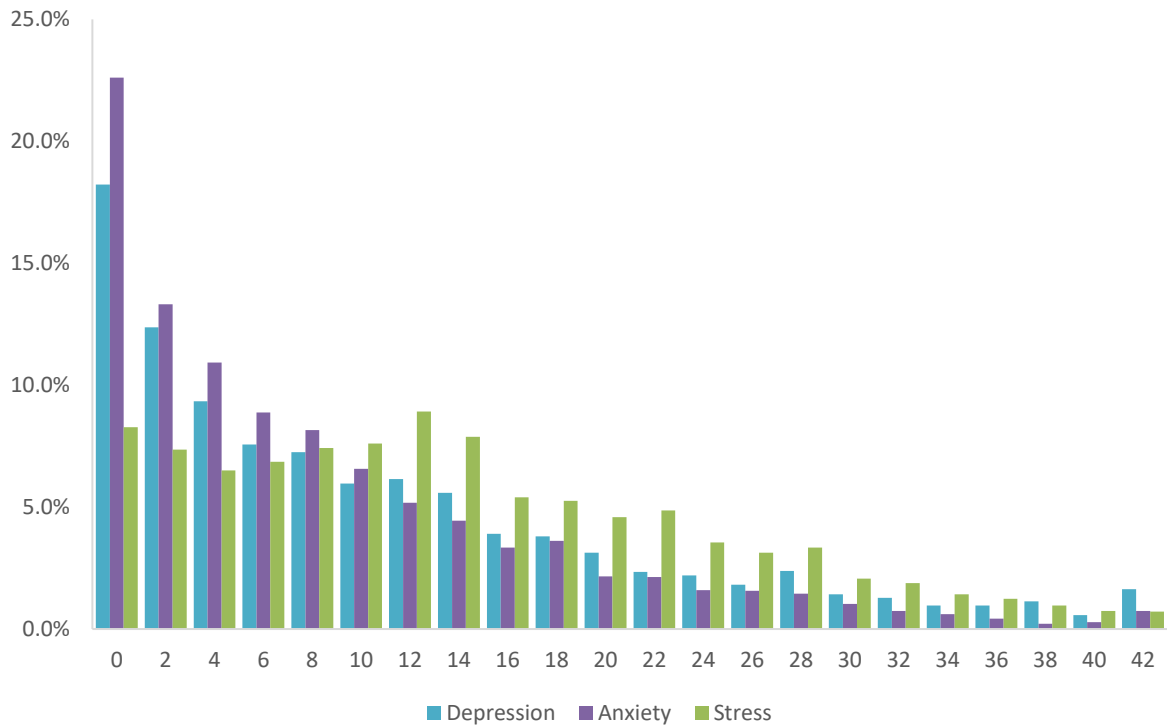


Figure 54. Depression, anxiety and stress distributions.

Staffing levels, skill mix and nurse wellbeing

Depression, anxiety, stress, disengagement and exhaustion were also examined by respondent's personal concerns over staffing, skills mix and workload, as these were noted to be frequently reported concerns among respondents. Those who were not at all, slightly or somewhat concerned were compared with those who were moderately or extremely concerned across each of these wellbeing indicators (Table 11). Those who were moderately or extremely concerned over staffing, skills mix and workload had statistically significantly higher scores for depression, anxiety, stress disengagement and exhaustion compared with those who were not at all, slightly or somewhat concerned across the three work factors.

Table 11. Differences in DASS and OLBI scores by levels of concern for staffing and skills mix.

	Mean score difference* (95% CI)	t statistic	p value
Staffing levels			
Depression (DASS)	6.36 (5.49 to 7.23)	14.34	<0.001
Stress (DASS)	15.18 (5.51 to 7.15)	15.18	<0.001
Anxiety (DASS)	14.20 (4.65 to 6.14)	14.20	<0.001
Disengagement (OLBI)	0.43 (0.39 to 0.48)	19.99	<0.001
Exhaustion (OLBI)	24.74 (0.48 to 0.56)	24.74	<0.001
Skills mix			
Depression	5.66 (4.81 to 6.51)	13.12	<0.001
Stress	5.55 (4.76 to 6.35)	13.67	<0.001
Anxiety	12.82 (4.02 to 5.48)	12.82	<0.001
Disengagement	0.39 (0.35 to 0.43)	18.74	<0.001
Exhaustion	0.46 (0.42 to 0.50)	22.27	<0.001
Workload			
Depression	6.98 (6.22 to 7.74)	18.00	<0.001
Stress	7.43 (6.72 to 8.14)	20.40	<0.001
Anxiety	5.52 (4.86 to 6.17)	6.17	<0.001
Disengagement	0.43 (0.39 to 0.47)	22.15	<0.001
Exhaustion	0.55 (0.52 to 0.59)	30.02	<0.001

*difference in concern between the two groups who were not at all, slightly or somewhat concerned (the control group) as compared with those that were moderately or extremely concerned (the comparison group). Values greater than zero (0) indicate poorer outcomes for those who were moderately or extremely concerned.

Psychological support

Just over one-quarter of respondents sought work-related mental health/ wellbeing support from external providers ($n = 1019$; 29.0%) since the start of the pandemic. Of those that reported seeking mental health or wellbeing support, the most common sources were from primary care providers followed by employee assistance programs (Figure 55). There was also a high proportion of respondents who indicated other services. These included psychological or psychiatric services, social work services and informal support networks (e.g., family, friends).

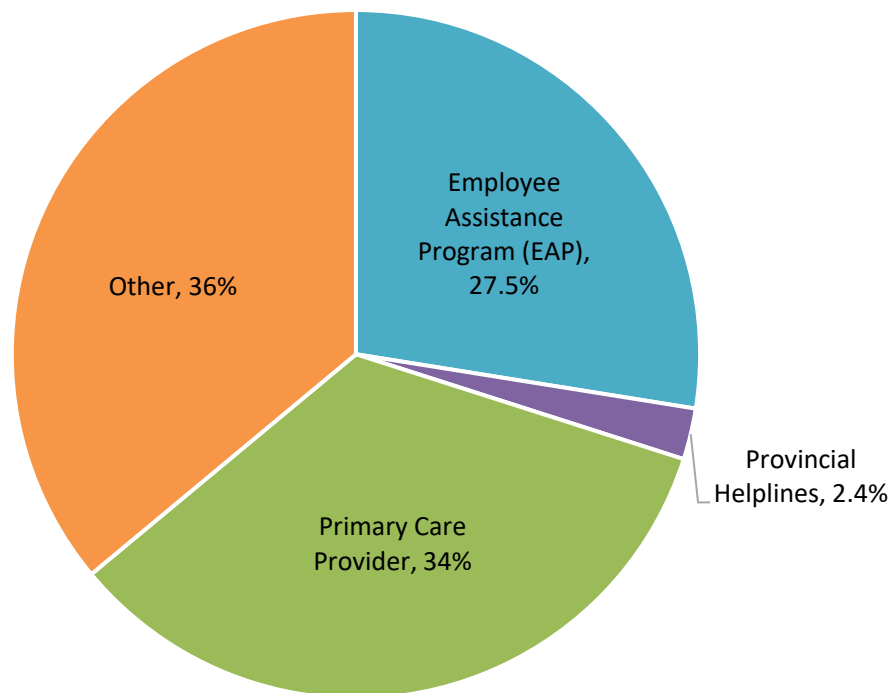


Figure 55. Services where respondents sought wellbeing support ($n = 984$).

Comparison with other RBRC COVID-19 and workforce wellbeing surveys

Two similar workforce climate surveys during the COVID-19 pandemic were undertaken by RBRC in the year 2020 and 2021. Nursing Now is a global campaign that aims to improve health by raising the status and profile of nursing globally. The Nursing Now survey ran from March to April 2021 ($n = 1,335$). The survey on the Australian nursing, midwifery, and care worker workforce ran from August to October 2020 ($n = 11,902$).

Comparisons with key items from these surveys with the Canadian Survey are reported in this section in order to map similarities and differences in the international experience of the nursing workforce. Minor variations in question wording and response options for local contextual differences are accounted for in the analyses and, where applicable, variations in response options are noted.

Respondents and Occupational demographics

Age

The mean age of respondents across the three surveys was similar: Canada ($M = 44.4$, $SD = 21.9$), Nursing Now ($M = 44.5$, $SD = 12.0$) and Australia ($M = 48.3$, $SD = 12.3$).

Gender

There was little variation between the three surveys. The majority of respondents in Canada (92.8%), Nursing Now (87.6%) and Australia (91.4%) identified as female. Males represented between 5.9-11.8% and gender non-binary represented 0.2-0.5% across the three surveys (Table 12).

Table 12. Age and Gender across the three surveys.

	Age		Gender		
	Min	Max	Males	Females	Gender non-binary
Canada	18	89	5.9%	92.8%	0.5%
Nursing Now	20	85	11.8%	87.6%	0.2%
Australia	18	81	8.0%	91.4%	0.2%

Professional qualifications and Workplace

Most respondents in Canada (87.9%), the Nursing Now survey (78.2%) and Australia (68.6%) were registered nurses. The Canadian sample had the proportionally largest representation from nurses as the survey was not promoted to midwives, followed by the Nursing Now sample, which was primarily targeting the nursing workforce as part of its promotional campaign (though neither survey limited responses from a single profession). The Australian survey had the lowest proportion of registered nurses due to the survey being promoted to both nurses and midwives of the Australian Nursing and Midwifery Federation.

More than half of the respondents from Canada (51.1%), Nursing Now (60.7%) and Australia (58.0%) reported that their main workplace was a hospital (Figure 56).

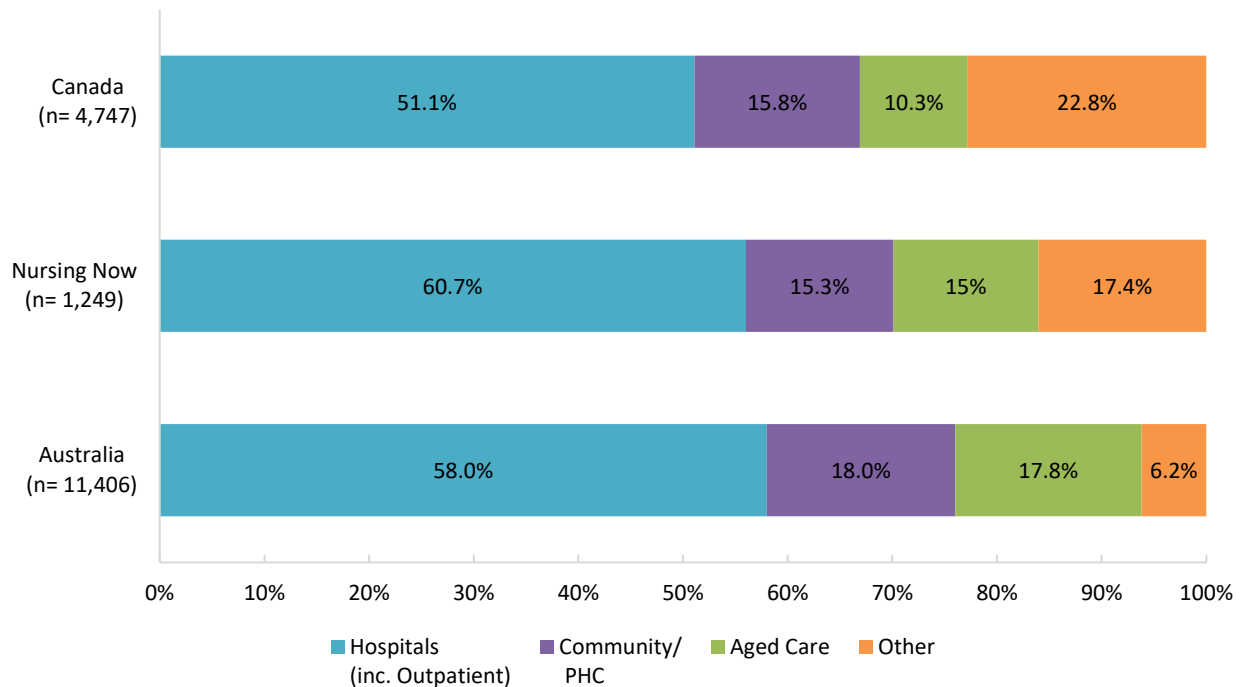


Figure 56. Main Workplace across three surveys.

Healthcare leadership and policy

COVID-19 workplace preparedness

Respondents were asked how they would rate their workplaces preparedness to manage COVID-19 cases identified in their workplace when the pandemic was declared and at the time of completing the survey. When the pandemic was declared (11 March 2020), two-thirds of respondents from Canada (65.1%), Nursing Now (70.8%) and more than half of respondents from Australia (57.6%) reported fair, poor or very poor on their workplace’s preparedness. This picture shifted for at the time of completing the survey, where three-quarters of respondents from Canada (77.3%) and Nursing Now (74.8%) reported good to excellent on their workplace’s preparedness. Note, this was not captured in the Australian survey.

COVID-19 infection prevention and control training

The majority of respondents from Canada (79.9%), Nursing Now (81.0%) and Australia (85.6%) reported having received COVID-19 infection prevention and control training from their employer. Similarly, the majority of respondents from Canada (88.4%), Nursing Now (81.7%) and Australia reported being moderately to extremely confident to practice safely as a result of their COVID-19 training.

COVID-19 in the workplace and care for cases

Respondents were asked whether they had provided direct care to patients/clients with confirmed or suspected COVID-19 in their workplace. Most respondents from the Canadian survey reported their workplace had provided care to one or more patients/clients with *suspected* COVID-19 (87.6%) or *confirmed* COVID-19 (82.0%). These values were higher than both the Nursing Now sample (78.0% and 70.2%, respectively) and the Australian sample (69.3% and 40.0%, respectively). This pattern

could be indicative of the timing of the survey and its relationship to the spread of COVID-19 globally (i.e., Australia was the first survey, followed by Nursing Now and finally Canada).

One-third of respondents from Canada (36.3%) and Australia (33.9%) indicated their workplace had assigned or asked for dedicated staff to care for patients with COVID-19. This was lower than the respondents from Nursing Now (56.9%).

Respondents also indicated how many cases had been cared for at their workplace. Canadian and Nursing Now samples showed similar patterns with a higher proportion of sites caring for 51 or greater patients with COVID-19, whereas for the Australian sample, there were far fewer participants reporting that their workplace had care for 51 or more cases of COVID. This is likely due to the timing of the surveys (i.e., Australia was in the field approximately 6-10 months prior to the Nursing Now and Canada surveys), and the relatively fewer number of COVID-19 cases in Australia compared to many other countries in the world including Canada (Figure 57).

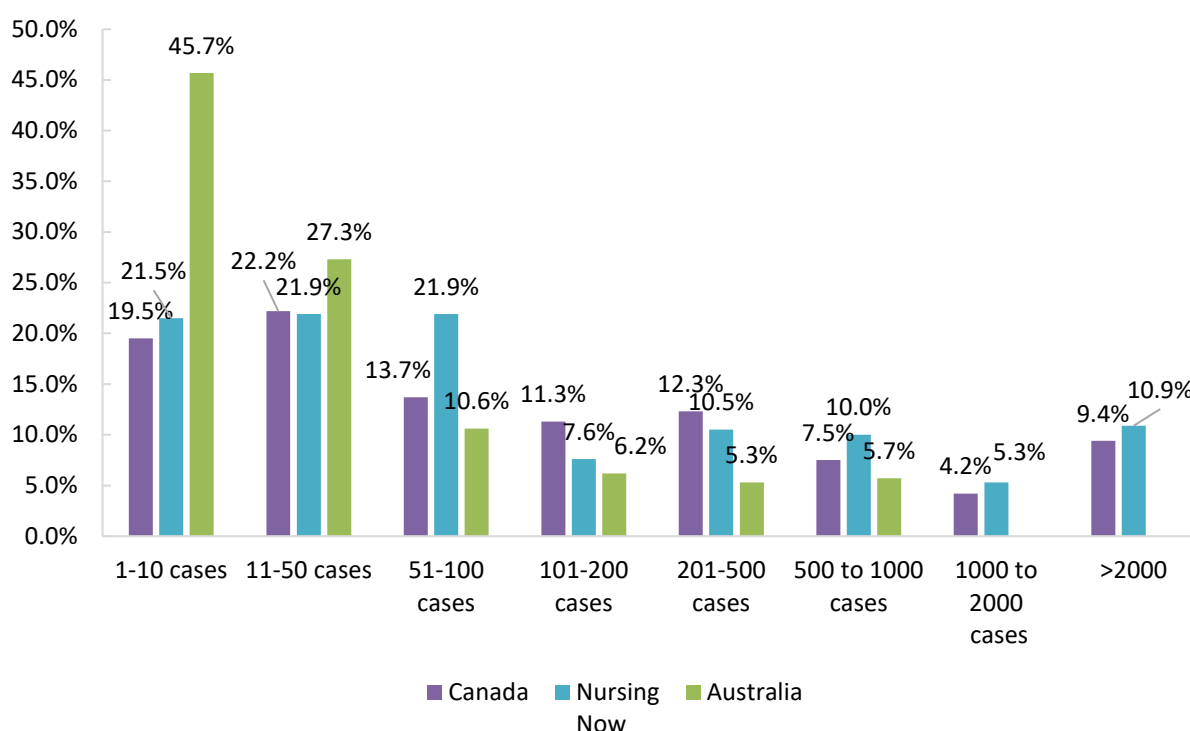


Figure 57. Cases of confirmed or suspected COVID-19 cases at the start of the pandemic

Note. The Australian survey options permitted recording of cases up to >500 only.

COVID-19 Information at your workplace

Respondents were asked to rate the COVID-19 information provided at their workplace in terms of being timely, trustworthy, clearly written, comprehensive, and consistent with other sources. Across all categories, at least 60.0% of respondents rated the information as good to excellent in all three surveys (Figure 58).

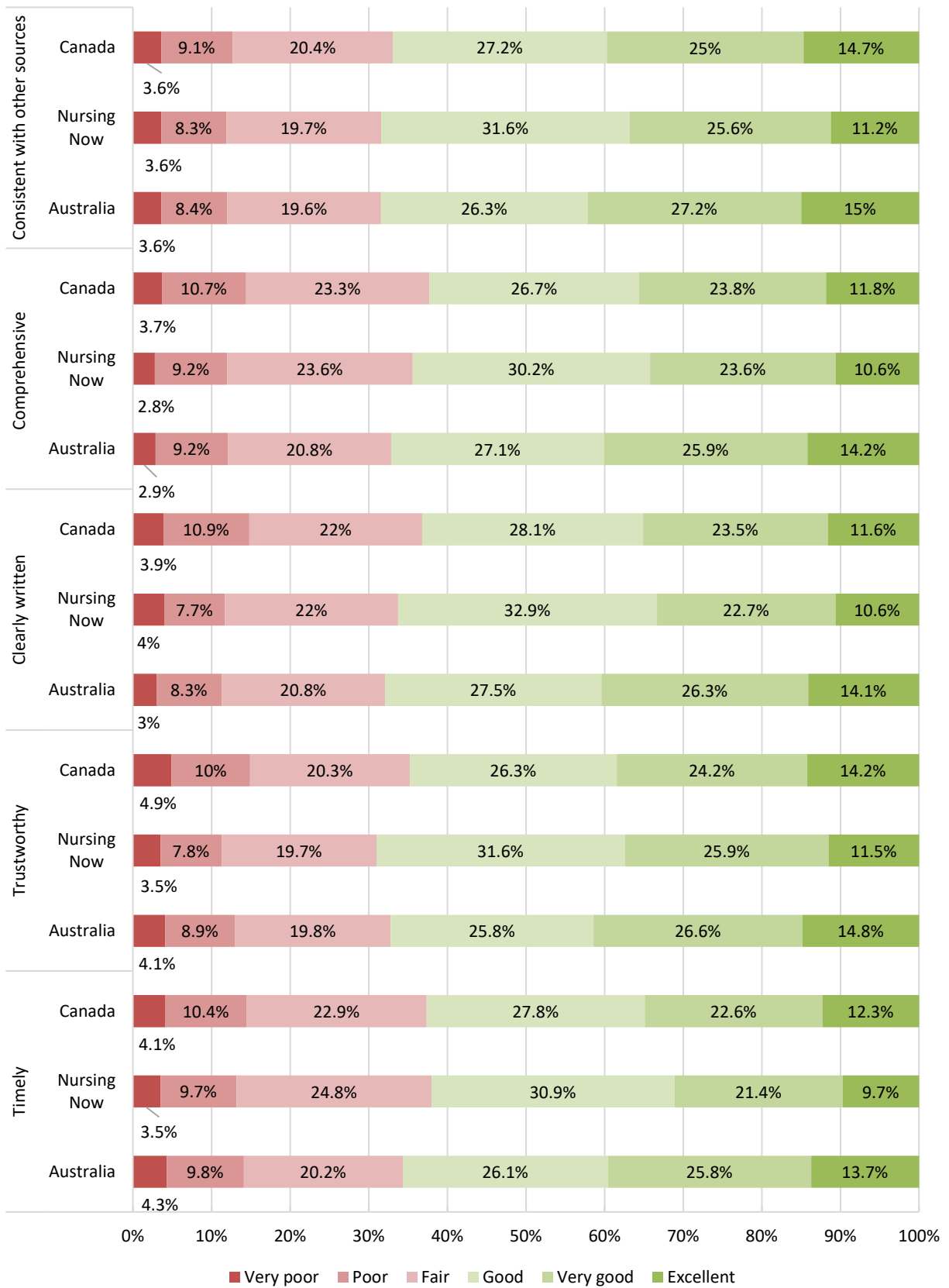


Figure 58. Ratings of COVID-19 information provision at respondents' workplaces.

Concerns about workplace because of COVID-19

Respondents were asked to indicate their level of concern when responding to a series of statements related to impacts on their workplace with the three most concerning factors shown below (Figure 59). Over two-thirds of respondents from Canada (76.2%), Nursing Now (75.2%) and Australia (69.4%) were somewhat to extremely concerned about the skill mix. Just over two-thirds of respondents from Canada (73.4%), Nursing Now (73.2%) and Australia (64.6%) were somewhat to extremely concerned about managing their workload. A large proportion of respondents from Canada (81.2%), Nursing Now (81.5%) and Australia (71.1%) were somewhat to extremely concerned by staffing numbers.

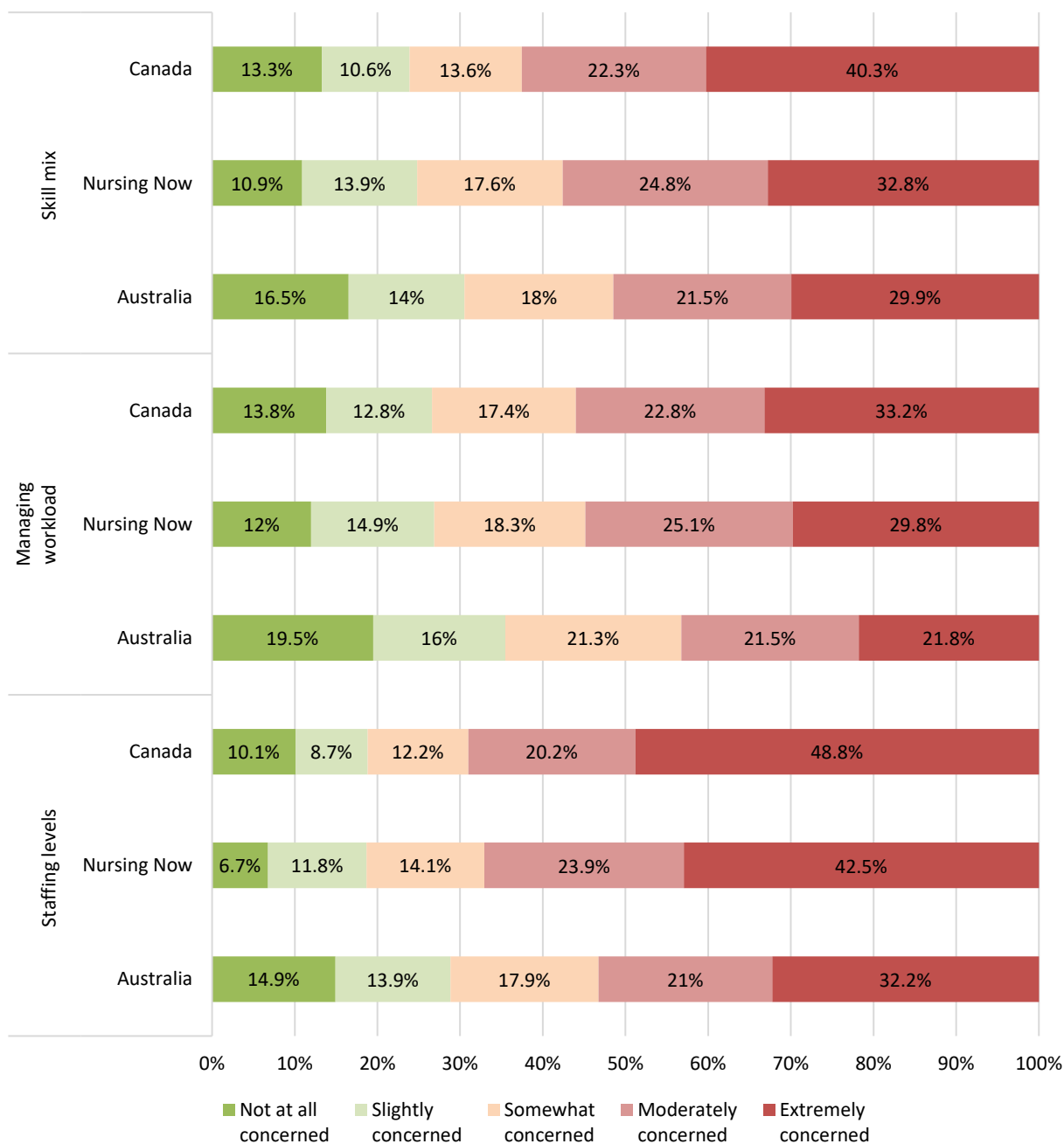


Figure 59. Workplace concerns for respondents from Canada, Nursing Now and Australia

Community support and harassment

Respondents were asked questions regarding: (i) experiences of abuse or threats at work from the public or patients at work, and (ii) community support for their work (Figure 60). Almost half of the respondents from Canada (49.8%) reported having experienced physical or verbal abuse or been threatened by members of the public/patients/clients at work. This was higher than both the Australian (33.3%) and Nursing Now (36.3%) samples. Two thirds of respondents from Canada (63.5%) and Nursing Now (69.9%) reported having experienced community support for their work. It was slightly lower in the Australian sample (59.2%).

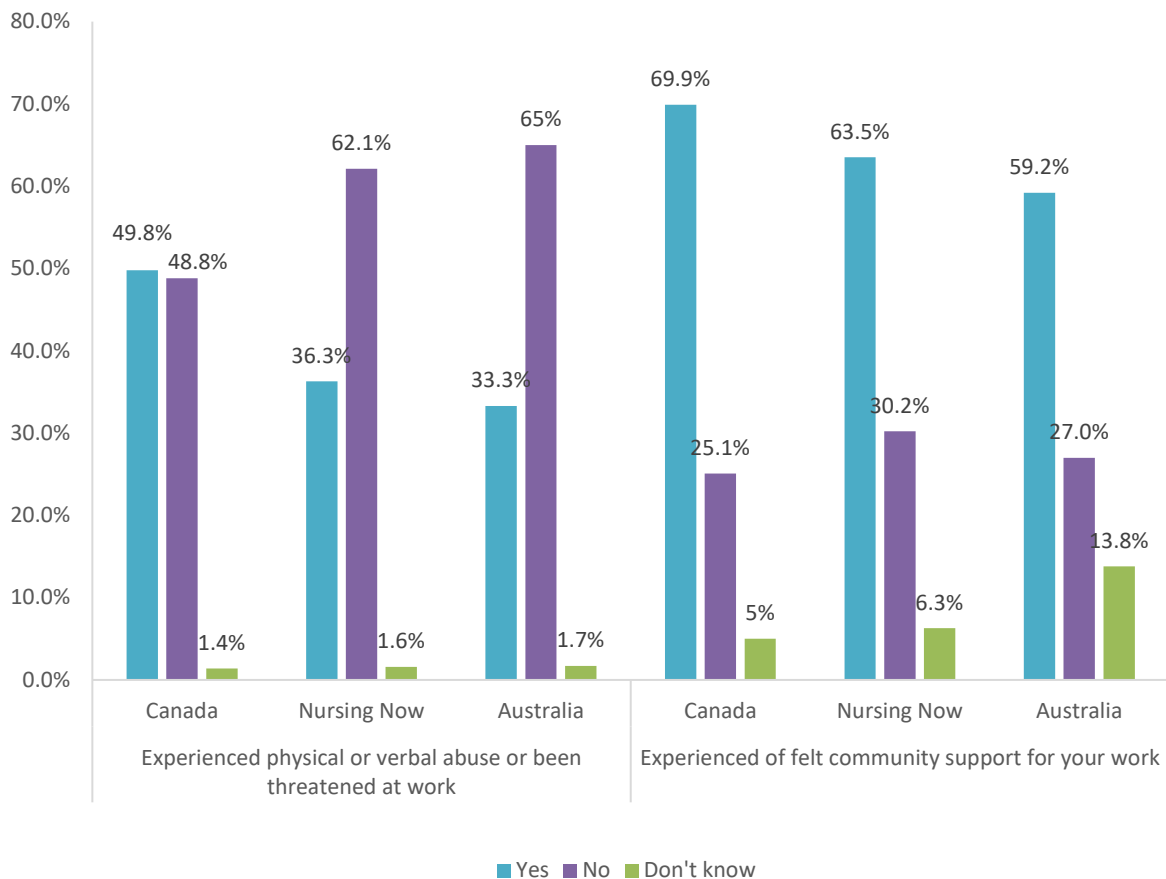


Figure 60. Community support and harassment for respondents from Canada, Nursing Now and Australia

The nursing practice environment and its impact

The practice environment

On average, there was a tendency to agree that nursing philosophy for quality care, praise and supervisory support were present in the practice environment for all respondents from Canada ($M = 2.79$, $SD = 0.73$), Nursing Now ($M = 3.01$, $SD = 0.79$) and Australia ($M = 2.91$, $SD = 0.64$). There was also a tendency to agree for nursing leadership for Nursing Now ($M = 2.79$, $SD = 0.91$) and Australia ($M = 2.60$, $SD = 0.69$). However, Canada ($M = 2.43$, $SD = 0.77$) was closer to the neutral midpoint indicating neither agreement nor disagreement for nursing leadership in the workplace. For resource and staffing adequacy, Canada ($M = 2.18$, $SD = 0.83$) had the lowest rating suggesting overall disagreement of sufficient staff and resources. This was followed by Australia ($M = 2.38$, $SD = 0.74$) and Nursing Now ($M = 2.54$, $SD = 1.00$), which were below or close to the neutral midpoint indicating neither agreement nor disagreement was present in the workplace (Figure 61).

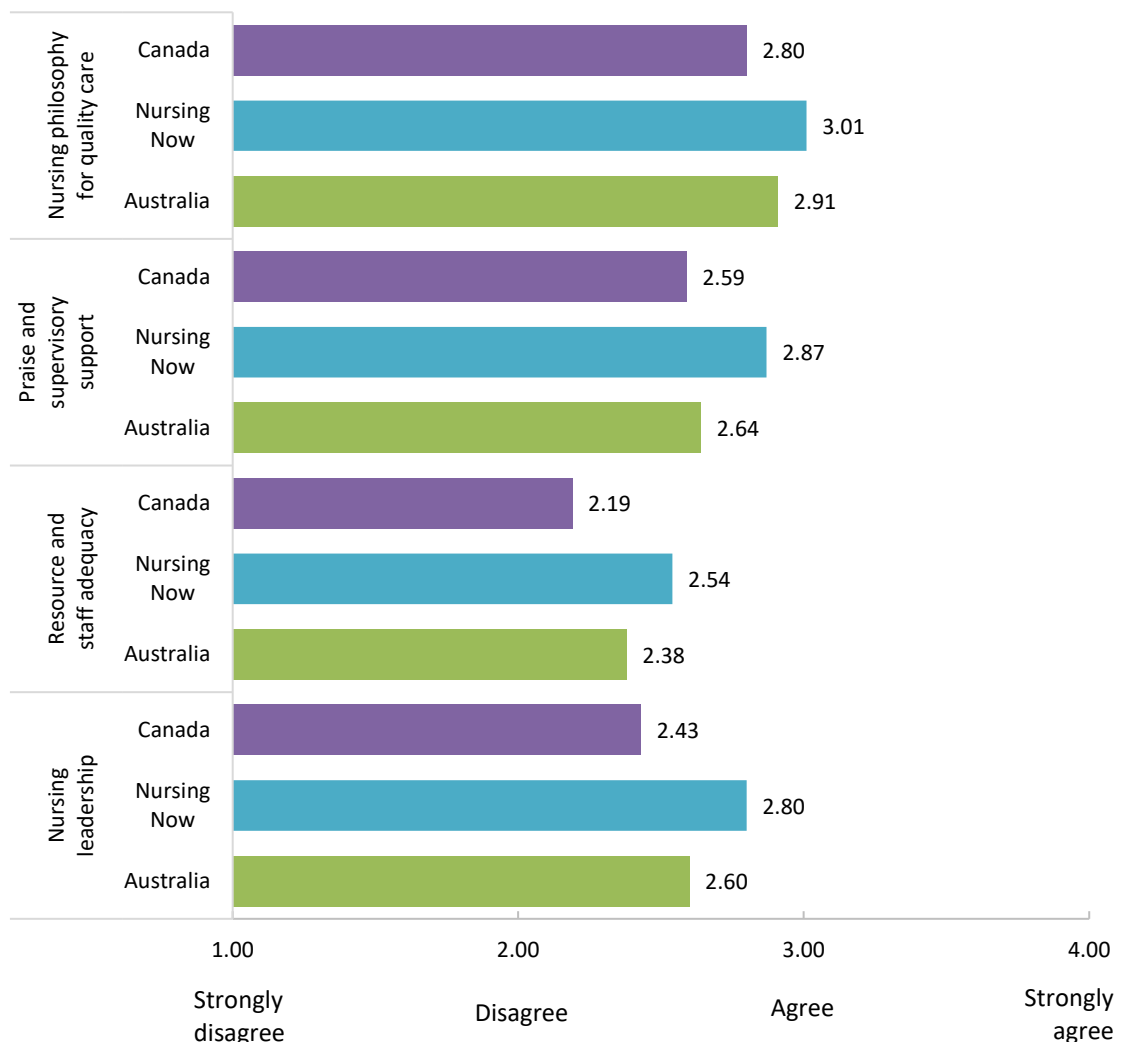


Figure 61. PES subscales mean scores for Canada, Nursing Now and Australia

Workplace demands

Workplace demands were measured by the COPSOQ-III and the pattern of results across the three study for each of the four sub-scales were similar. On average, respondents reported often working in a cognitively demanding environment with a high work pace. They reported working in environment where it was sometimes-to-often emotionally demanding and sometimes quantitatively demanding (Figure 62).

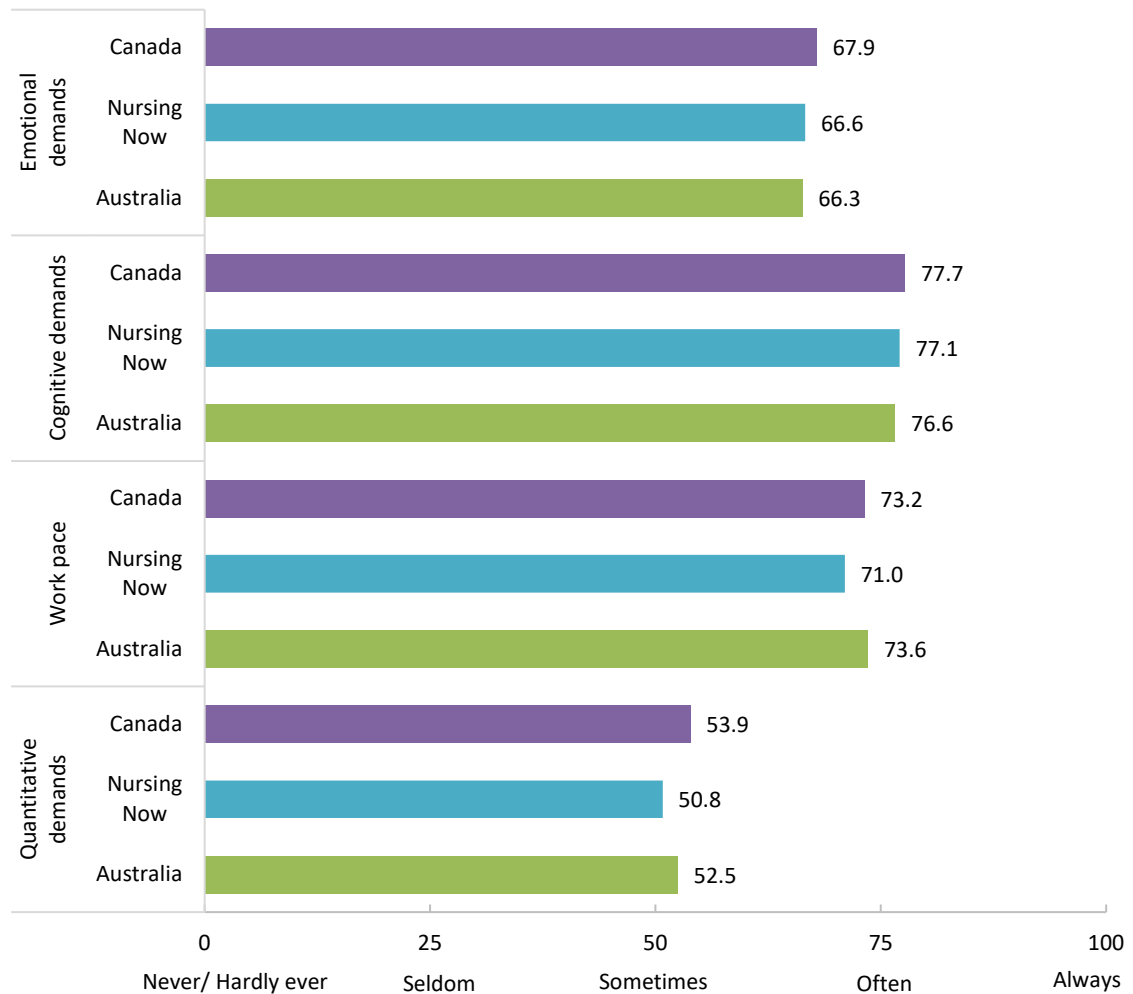


Figure 62. COPSOQ-III workplace demand mean scores for Canada, Nursing Now and Australia

Work-life conflict, role conflict and role clarity

Overall, respondents reported sometimes experiencing work-life conflict (Canada; $M = 60.2$, $SD = 31.2$, Nursing Now; $M = 56.6$, $SD = 29.5$, and Australia; $M = 51.1$, $SD = 29.8$) and role conflict (Canada; $M = 51.8$, $SD = 27.7$, Nursing Now; $M = 52.2$, $SD = 25.2$, and Australia; $M = 50.3$, $SD = 26.6$). Respondents reported often experiencing role clarity across the three surveys (Figure 63).

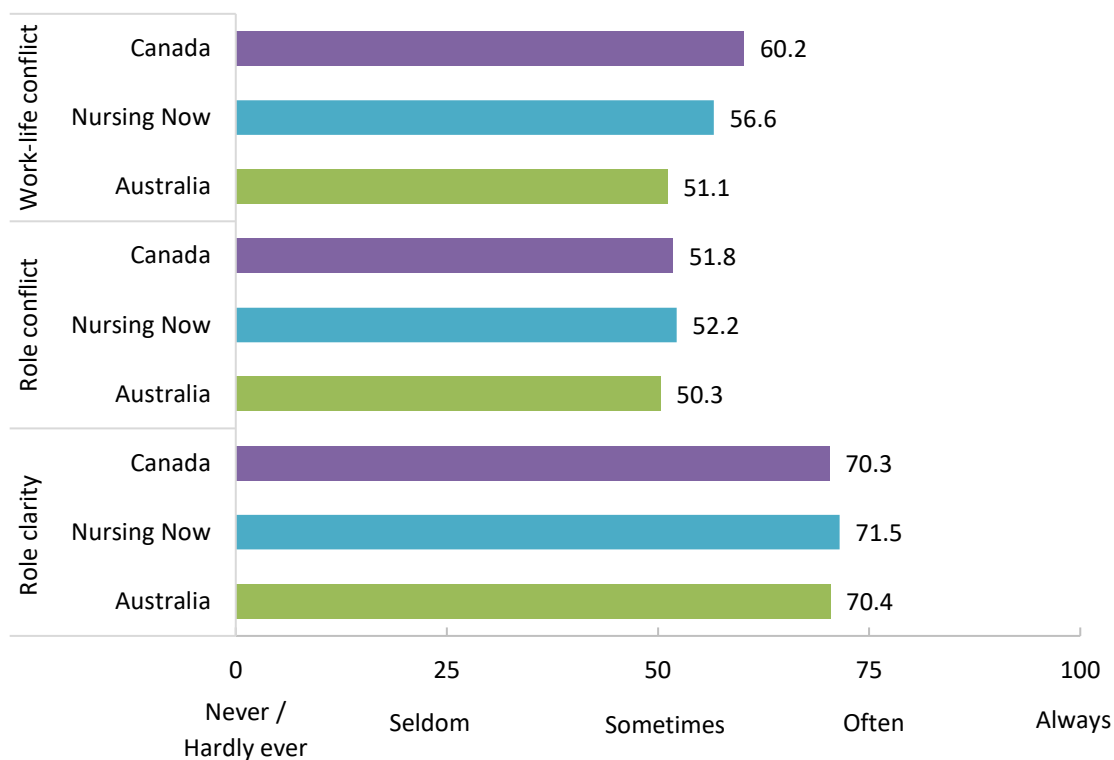


Figure 63. Work-life conflict, role conflict and role clarity for Canada, Nursing Now and Australia

Scope of practice and training

Over one-third of respondents from Nursing Now (36.0%), over a quarter from Canada (27.1%) and fewer than one in five from Australia (17.7%) reported that they were asked to work outside their usual scope of practice. Of those respondents, approximately two-thirds from Canada (67.9%) and Australia (63.3%) and over half from Nursing Now (54.3%) reported that they did not receive appropriate education and training to work within scope (Figure 64).

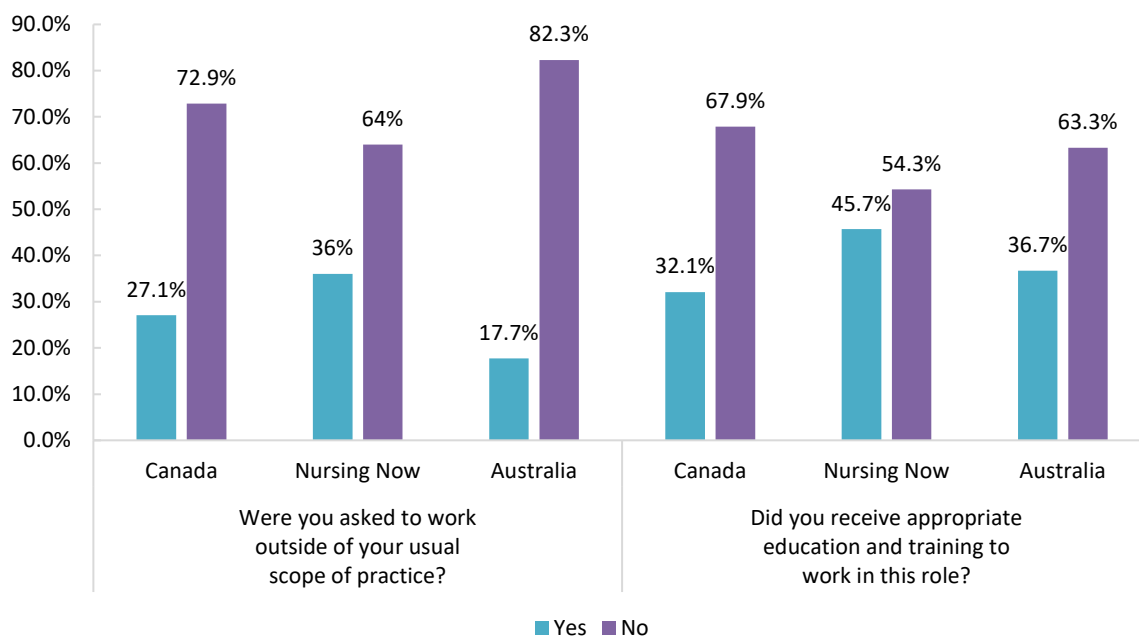


Figure 64. Scope of practice and training of respondents from Canada, Nursing Now and Australia

Workplace redeployment

A small proportion of respondents from Canada (14.9%), Nursing Now (12.1%) and Australia (18.8%) were redeployed to a different geographic area, long term care or other speciality of work due to COVID-19. Approximately half of the respondents from Canada (52.1%), Nursing Now (46.6%) and Australia (55.5%) who were redeployed did not receive education and training for their position. Across all three surveys, nurses who were redeployed to other areas, were most likely to be redeployed to COVID-19 screening areas or intensive care (Figure 65).

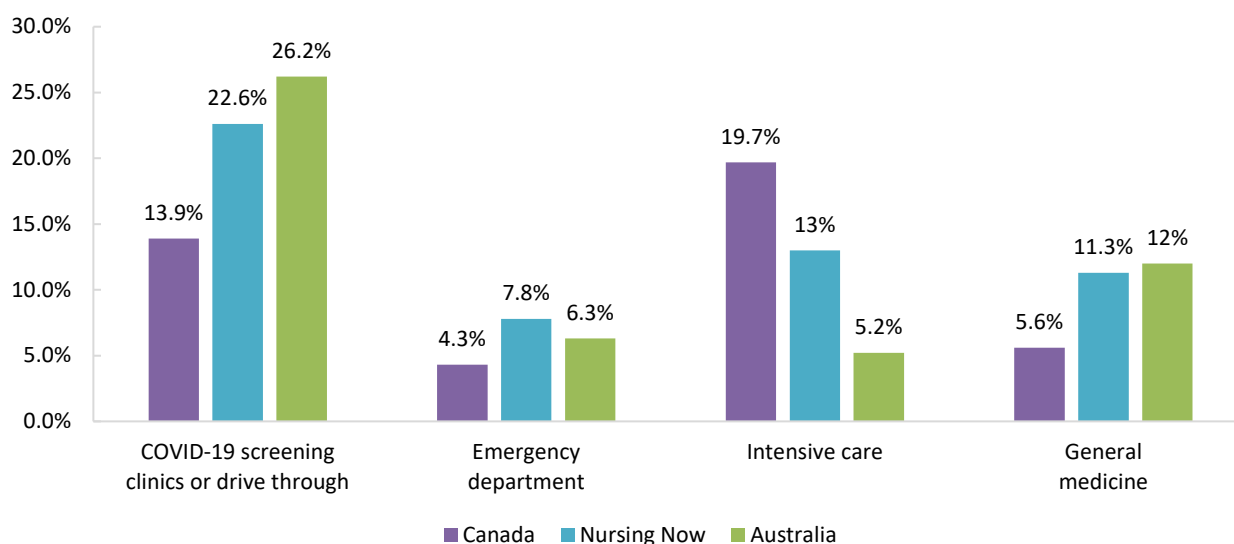


Figure 65. Area of work for nurses who were redeployed in Canada, Nursing Now and Australia

Personal protective equipment access

Respondents were asked a series of questions regarding personal protective equipment (PPE) at their primary workplace (Figure 66). At the time of the survey, more than 74.0% of respondents from Canada, Nursing Now and Australia reported often to always having the right type, right size, and a sufficient amount of PPE. Response patterns were similar across the three surveys with the Canadian sample tending to have more favourable responses followed by Nursing Now then the Australian sample.

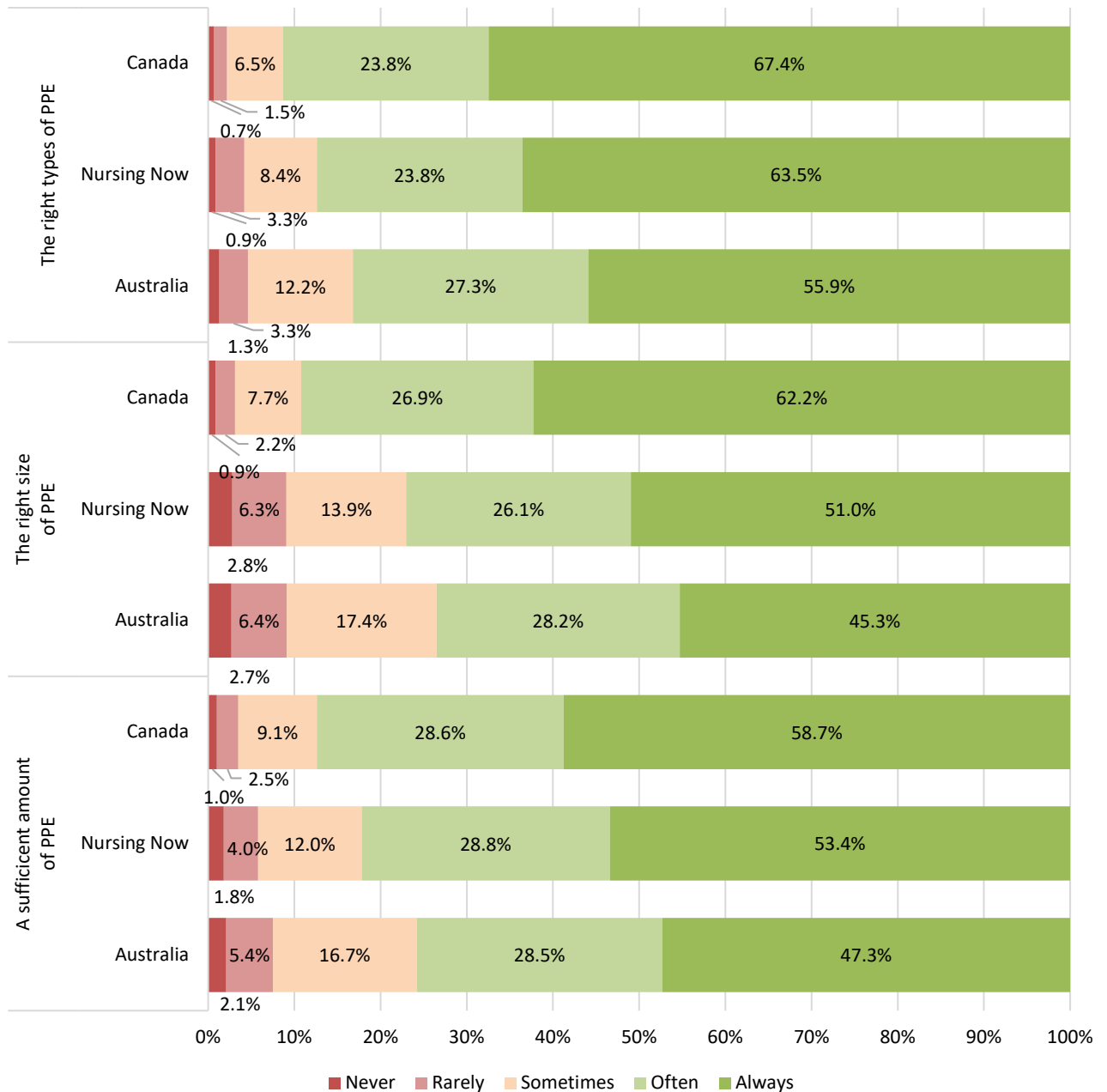


Figure 66. Personal protective equipment availability, Canada, Nursing Now and Australia surveys
 Notes. Respondents who indicated “Don’t know” or “Not applicable” were excluded from analyses.

Personal protective equipment support and training

More than half of the respondents from Canada (61.4%), Nursing Now (58.5%) and Australia (57.7%) reported that they agree to strongly agree to feeling supported about their workplace regarding PPE concerns and requirements. Approximately half of the respondents from Canada (56.7%), Nursing Now (49.6%) and Australia (51.4%) reported having adequate resources and staff to deliver high quality PPE training. Over half of the respondents from Canada (67.3%), Nursing Now (62.0%) and Australia (59.0%) agreed to strongly agreed that they felt confident that the PPE training that they received had equipped them to practice safely during the COVID-19 pandemic (Figure 67).

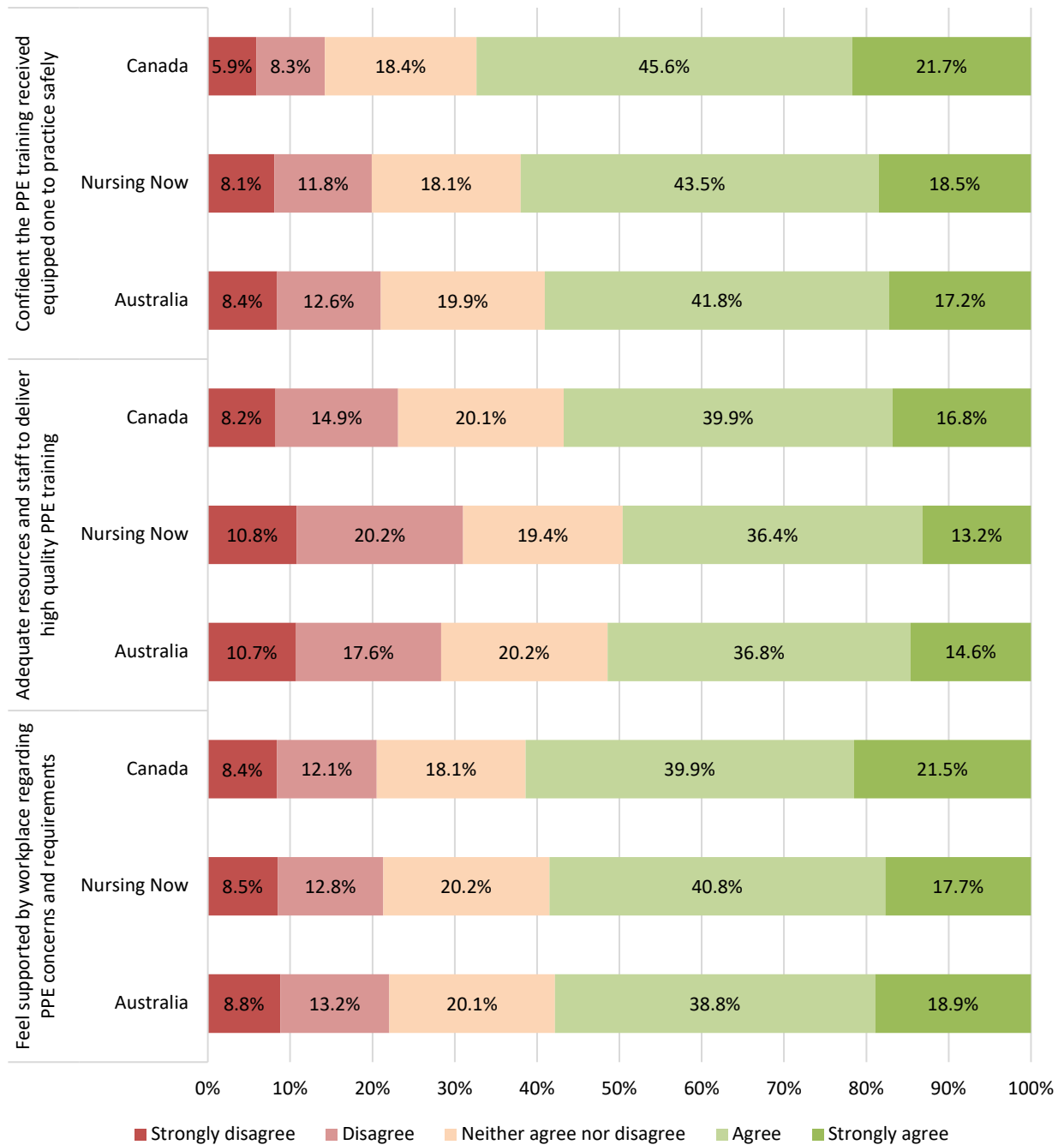


Figure 67. PPE organisational support and training, Nursing Now, Canada and Australia surveys
 Notes. Respondents who indicated or “Not applicable” were excluded from analyses.

Job satisfaction

Overall, respondents from Canada ($M = 3.45$, $SD = 1.00$), Nursing Now ($M = 3.38$, $SD = 1.02$) and Australia ($M = 3.31$, $SD = 0.89$) indicated some satisfaction with collegial relationships as measured by the MMSS. Similarly, Canada ($M = 3.25$, $SD = 1.16$) and Nursing Now ($M = 3.25$, $SD = 1.18$) indicated some satisfaction for work scheduling and flexibility within their workplace while Australia ($M = 3.70$, $SD = 0.87$) rated this higher. Respondents from all three surveys expressed some dissatisfaction with leadership and career opportunities and extrinsic rewards (Figure 69).

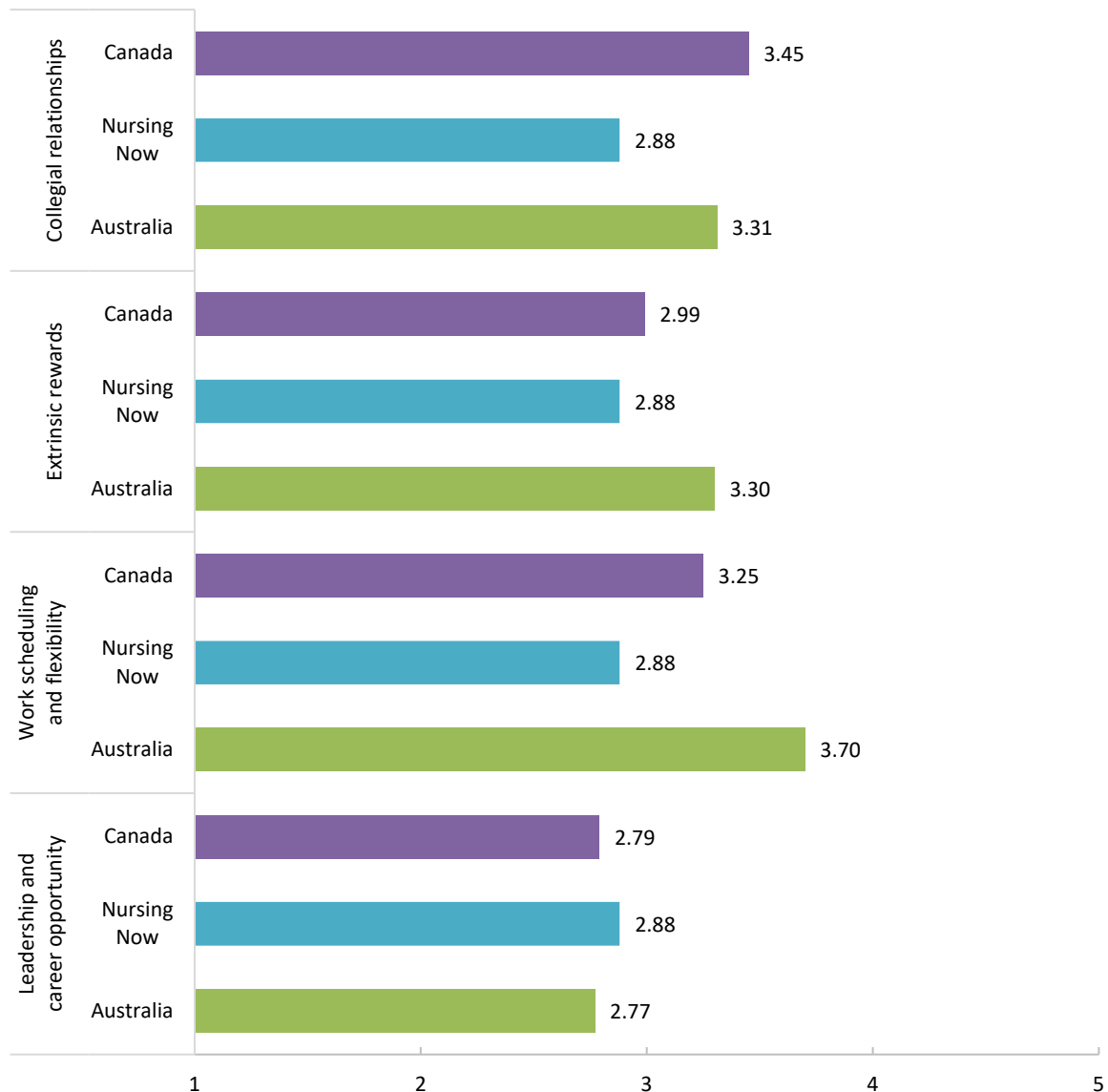


Figure 68. Job satisfaction sub-scale mean scores for Canada, Nursing Now and Australia, as measured by the MMSS.

Work engagement

The UWES-9 was used to measure three indices of work engagement: absorption, dedication and vigour (Figure 70). On average, respondents from Canada ($M = 3.85$, $SD = 1.30$) and Nursing Now ($M = 4.12$, $SD = 1.33$) reported often feeling a sense of dedication. Similarly, respondents from Canada ($M = 3.40$, $SD = 1.24$) and Nursing Now ($M = 3.69$, $SD = 1.28$) reported sometimes to often feeling a sense of absorption in their role. Respondents reported sometimes feeling a sense of vigour in their role from both the Canadian ($M = 2.88$, $SD = 1.43$) and Nursing Now samples ($M = 3.38$, $SD = 1.43$). These questions were not included in the Australian study.

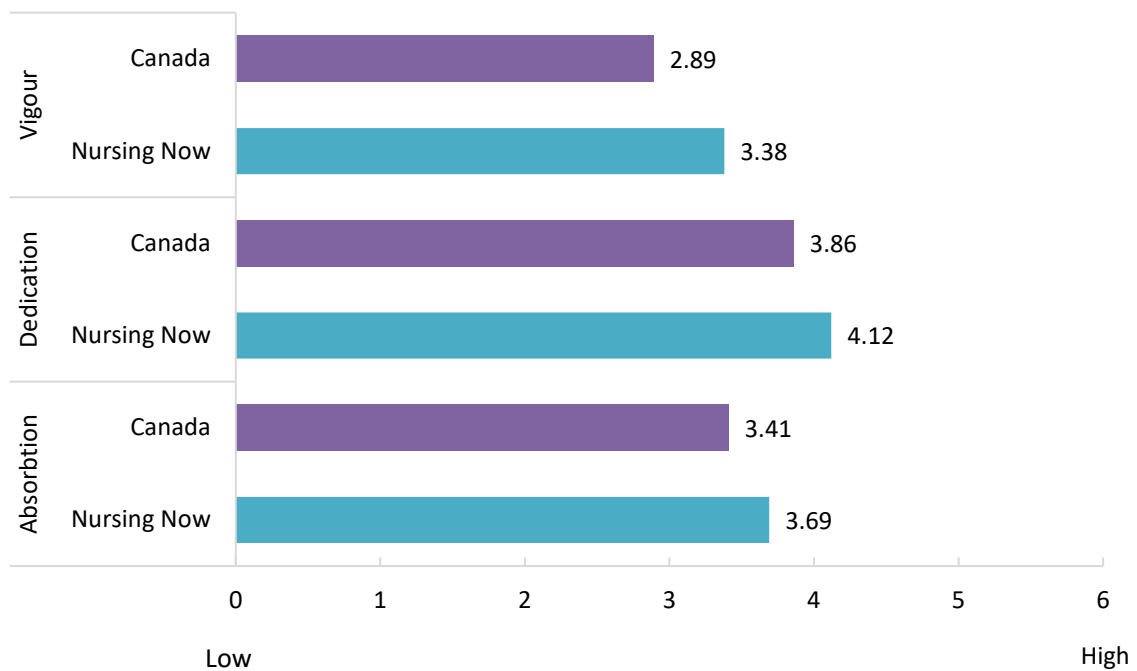


Figure 69. Work engagement subscale mean scores for Canada and Nursing Now, as measured by the UWES-9.

Burnout

Overall, respondents from Canada ($M = 2.76$, $SD = 0.56$), Nursing Now ($M = 2.63$, $SD = 0.54$) and Australia ($M = 2.60$, $SD = 0.49$) indicated above average levels of exhaustion as measured by the OLBI. Scores for disengagement were slightly lower than those for exhaustion (Figure 71).

Respondents from Canada displayed the highest levels of burnout as measured by these indicators among the three samples.

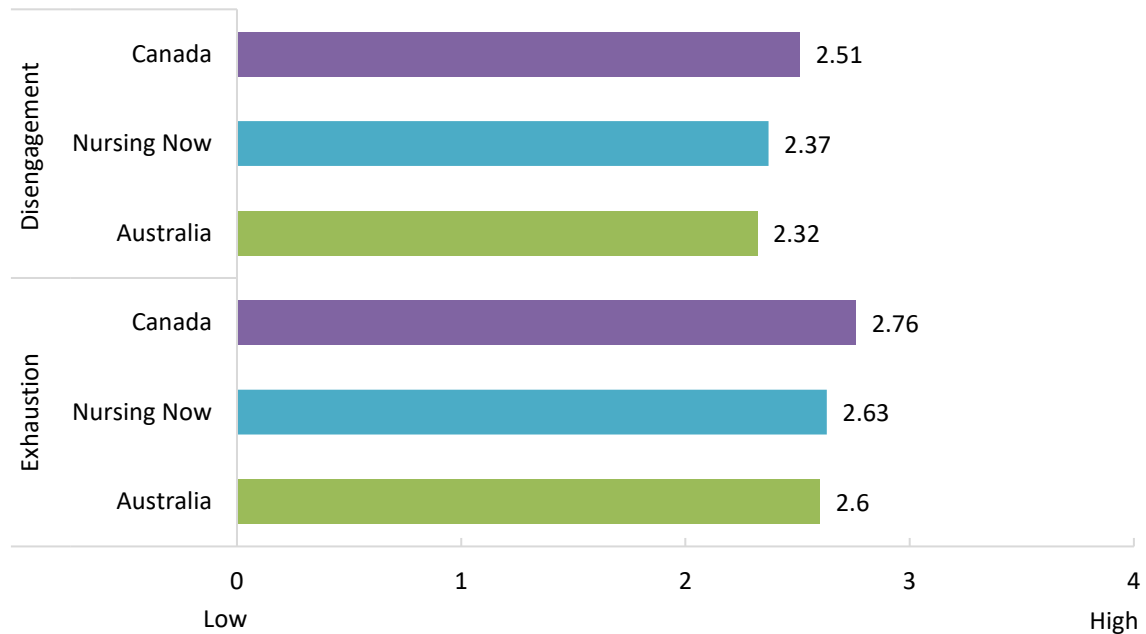


Figure 70. OLBI subscale mean scores for Canada, Nursing Now and Australia

Responses were also classified based on published cut-off scores for exhaustion (>2.25) and disengagement (>2.1 ; Table 13). Those who scored high on both, were classified as burnt-out. Comparison shows that respondents from Canada ($n = 2153$, 75.3%) were more burnt out than respondents from Nursing Now ($n = 573$, 67.1%) and Australia ($n = 5087$, 65.7%).

Table 13. Distribution of Burnout results for Canada, Nursing Now and Australia

Classification	Normal	Exhausted	Disengaged	Burnt out
Canada	11.4%	8.6%	4.6%	75.3%
Nursing Now	13.8%	12.9%	6.2%	67.1%
Australia	13.5%	15.6%	5.1%	65.7%

Intentions to leave

Over half of the respondents from Canada (68.5%), Nursing Now (55.2%), and Australia (56.9%) had plans to leave within the next 5 years (Figure 72). Of those who did plan to leave their job, approximately one-third from Canada (32.3%) and Nursing Now (36.5%) and one-quarter of respondents from Australia (26.8%) were not intending to exit the profession entirely.

Of those who did plan to leave their current job, similar proportions of respondents from Canada (12.6%), Nursing Now (17.1%) and Australia (16.9%) intended to exit their profession to work in another field. Similar proportions of respondents from Nursing Now (23.9%), Canada (29.4%) and Australia (29.6%) intended to retire.

Almost three-quarters of respondents from Nursing Now (73.5%) and almost two-thirds of respondents from Canada (64.2%) reported that they were more than five years away from being eligible to retire. This question was not included in the Australian survey.

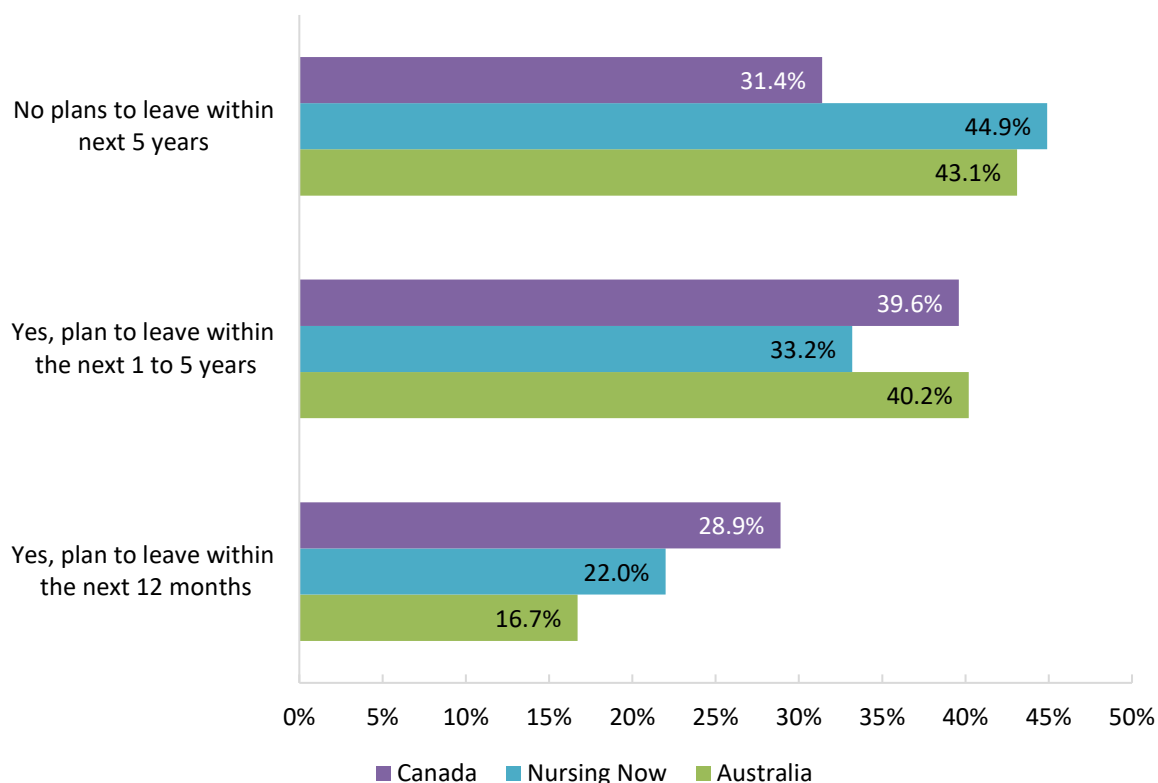


Figure 71. Responses regarding intentions to leave current position across three surveys.

Nurse wellbeing and access to support

Physical health and Mental health concerns

Almost two-thirds of respondents from Canada (61.0%) and Nursing Now (60.0%) were somewhat to extremely concerned about their physical health at the start of the pandemic. However, at the time of the survey this had decreased to about half of the respondents from Canada (44.4%) and Nursing Now (51.6%) being somewhat to extremely concerned about their physical health (Figure 73).

With respect to mental health, this pattern was reversed. At the start of the pandemic almost half of the respondents from Canada (45.2%) and Nursing Now (47.0%) were somewhat to extremely concerned about their mental health. This concern had increased at the time of the surveys for both participants from Canada (64.2%) and Nursing Now (63.0%).

In the Australian survey, respondents were only asked one question that encompassed their overall health. Here, three-quarters of respondents (75.5%) were somewhat to extremely concerned about their mental and physical health at the start of the pandemic, which moderately reduced to almost two-thirds (63.8%) being somewhat to extremely concerned at the time of the survey.

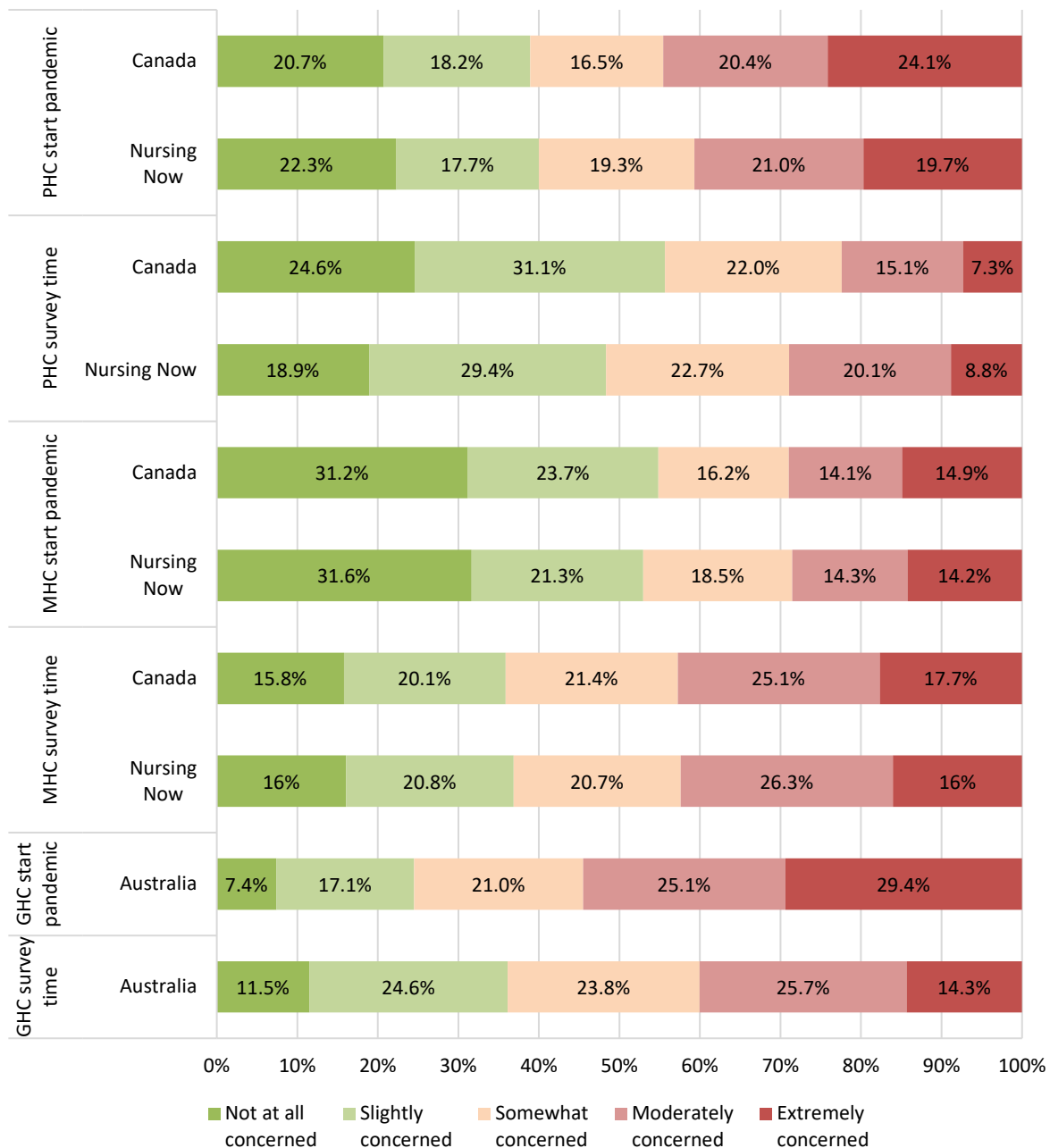


Figure 72. Physical and mental concerns at the start of the pandemic and at the time of the survey for Canada, Nursing Now and Australia

Note. PHC (physical health concerns) and MHC (mental health concerns). Australia was only asked one question regarding general health concerns (GHC).

Concerns about home life because of COVID-19

Respondents were asked to indicate their level of concern when responding to a series of statements related to impacts on their home life. Figure 74 below shows the three areas of greatest concern to respondents. Over two-thirds of respondents from Canada (73.6%), Nursing Now (80.7%) and Australia (76.4%) were somewhat to extremely concerned about keeping their family / the people they live with safe. Approximately two-thirds of respondents from Canada (70.0%), Nursing Now (69.8%) and Australia (65.3%) were somewhat to extremely concerned about their psychological wellbeing. Over half of the respondents from Canada (57.5%), Nursing Now (64.0%) and Australia (67.8%) were somewhat to extremely concerned about their personal health and/ or safety.

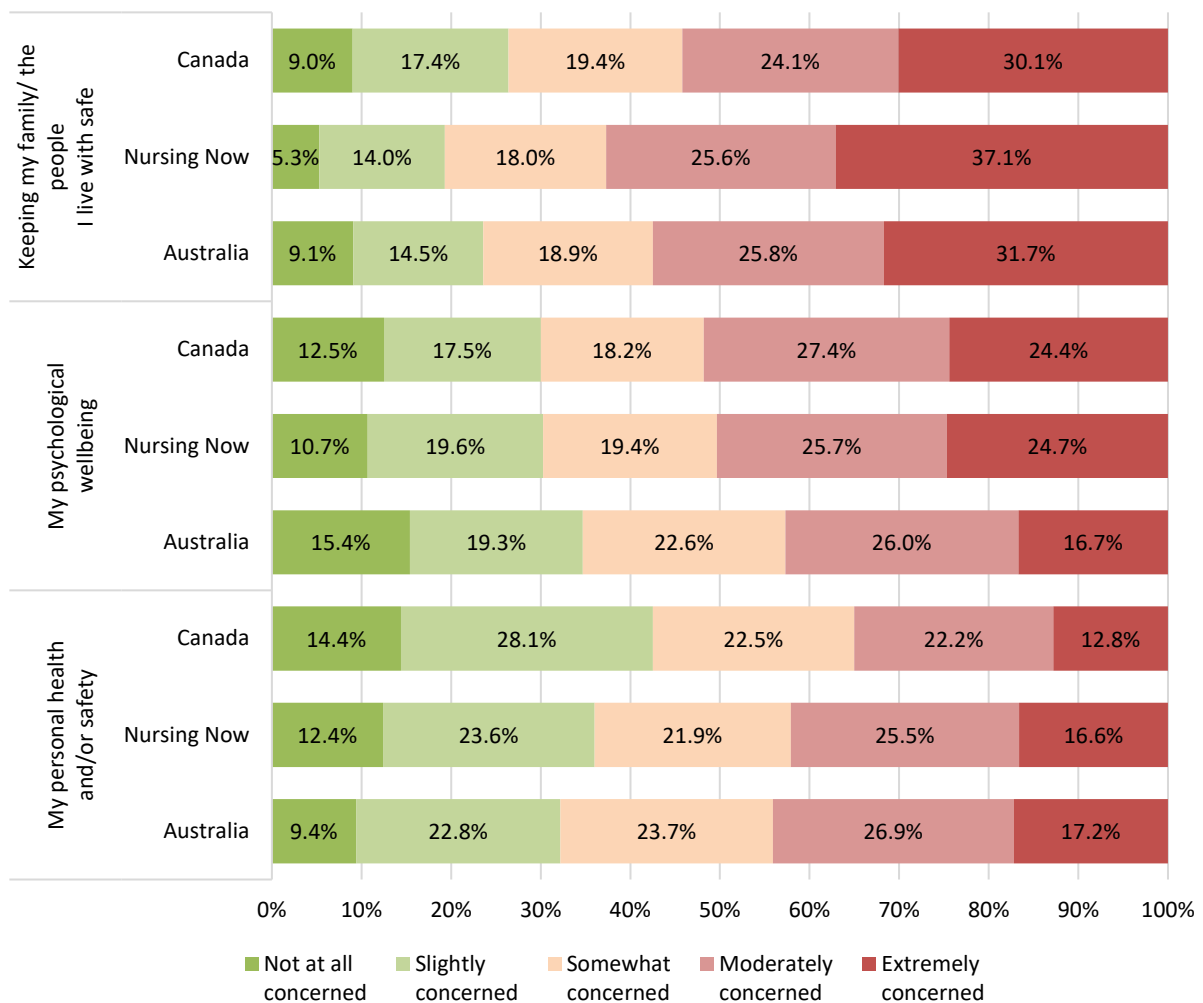


Figure 73. Concerns about home life for respondents from Canada, Nursing Now and Australia

Resilience

Resilience was measured using the Brief Resilience Scale (BRS). Overall, Canada ($M = 3.39$, $SD = 0.77$), Nursing Now ($M = 3.46$, $SD = 0.71$) and Australia ($M = 3.42$, $SD = 0.74$) reported an average level of resilience as measured by the BRS (Figure 75).

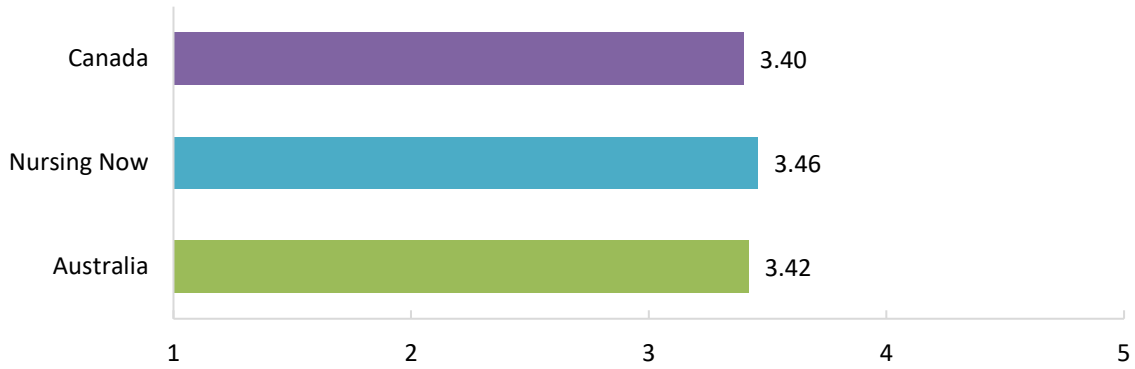


Figure 74. Resilience mean scores for Nursing Now, Canada and Australia, as measured by the BRS

Depression, anxiety and stress

On average, respondents from Nursing Now ($M = 8.32, SD = 9.29$) and Australia ($M = 8.20, SD = 9.35$) reported symptoms of depression in the normal range as measured by the DASS-21. Canada ($M = 10.7, SD = 10.6$) reported symptoms in the mild range. Respondents from Nursing Now ($M = 7.70, SD = 8.70$) and Australia ($M = 6.97, SD = 8.09$) reported anxiety symptoms in the normal range and Canada ($M = 8.49, SD = 9.05$) reported mild anxiety symptoms. For stress, respondents from Nursing Now ($M = 12.3, SD = 9.85$), Canada ($M = 13.8, SD = 10.0$) and Australia ($M = 11.3, SD = 8.94$) reported a normal range (Figure 76).

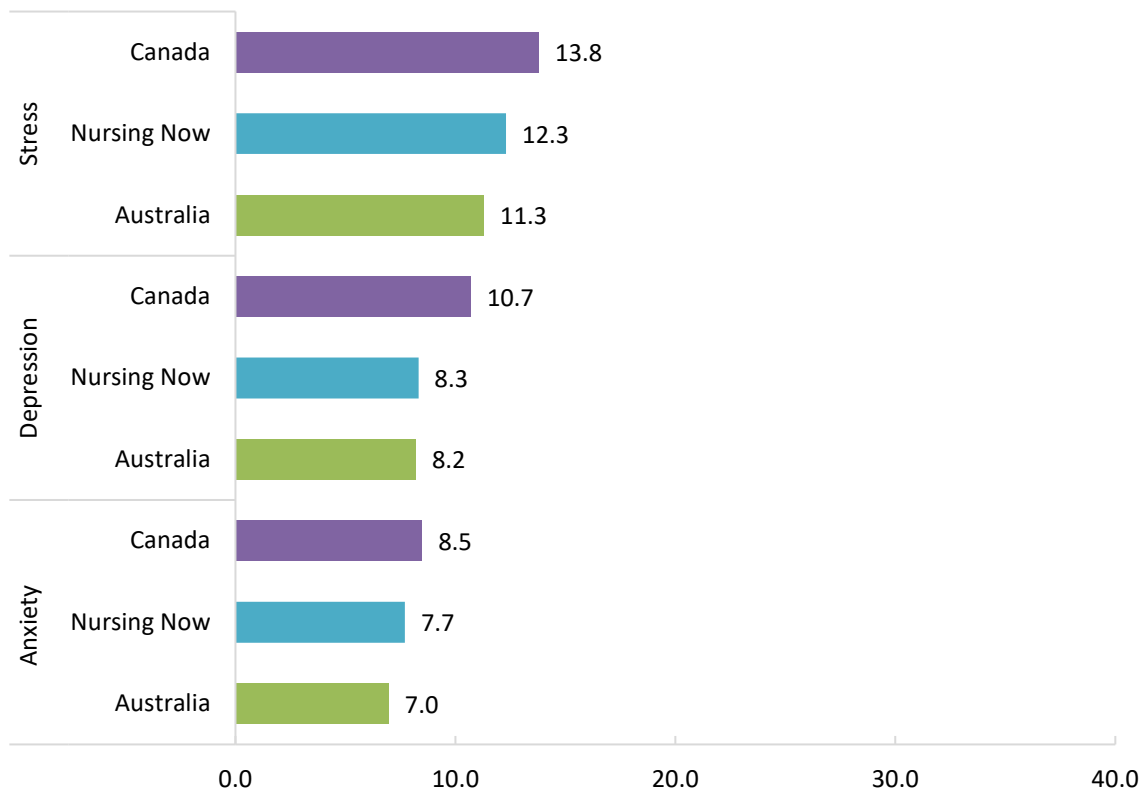


Figure 75. Depression, Anxiety and Stress mean scores, as measure by the DASS-21

Depression, anxiety, and stress scores were also analysed according to symptom severity (Table 14). Results showed that while response patterns were similar across all three surveys, respondents from Canada tended to have higher symptom severity across all three mental health measures compared with those from the Nursing Now or the Australian samples, as indicated by the higher proportion with moderate, severe, or very severe scores. Results patterns were as follows:

- **Depression:** between 33.0% (Nursing Now) and 45.2% (Canada) had mild to extremely severe symptom severity.
- **Anxiety:** between 35.1% (Australia) and 44.3% (Canada) had mild to extremely severe symptom severity.
- **Stress:** between 27.1% (Australia) and 39.2% (Canada) had mild to extremely severe symptom severity.

Table 14. Depression, anxiety, and stress symptom severity scores by survey.

		Canada	Nursing Now	Australia
Depression	Normal	54.8%	67.0%	65.7%
	Mild	12.1%	10.1%	11.0%
	Moderate	16.4%	11.1%	12.2%
	Severe	6.4%	7.8%	5.0%
	Extremely severe	10.3%	4.0%	6.0%
Anxiety	Normal	55.7%	59.6%	64.9%
	Mild	8.2%	7.3%	7.2%
	Moderate	16.2%	15.5%	13.8%
	Severe	7.0%	6.3%	4.8%
	Extremely severe	13.0%	11.2%	9.3%
Stress	Normal	60.8%	64.7%	72.9%
	Mild	10.7%	11.1%	9.8%
	Moderate	13.0%	13.9%	8.2%
	Severe	10.4%	4.4%	6.1%
	Extremely severe	5.1%	6.0%	3.0%

Discussion

This study explored the impact of COVID-19 on the nursing profession across all healthcare sectors in Canada. The timing of the survey coincided with the downward trend of the second European wave and increasing case numbers across North America and other parts of the world as more virulent strains of the virus emerged. The ongoing global surges of COVID-19 have meant that nurses have not had a reprieve from the first wave of the pandemic. In May 2020, 20% of COVID-19 cases were from health care workers (HCW). However, this proportion declined to 6.5% in September 2020.(21) However, the national health care infection rate in Canada is four times the rate than in China.(22) The impact of the first wave of the pandemic on the HCWs across the globe has been explored in several studies which was focused more with the availability of PPE and treatment regimens.(23-25) While many of these concerns are still evident and ongoing, these have been superseded by concerns over the workforce environment, access to workplace psychological or mental health support and effects of good leadership as they relate to management practices that result in a safe and decent working environment. This section of the report highlights key findings for further consideration and recommendations for workforce support and preparedness.

Regional and local leadership

Leadership is fundamental to advancing the nursing profession.(26) The State of the World's Nursing report 2020, co-authored by WHO, ICN and Nursing Now, identified that the world must strengthen both current and future nursing leaders to ensure they maintain influence at the policy and healthcare decision making tables and hence are able to ensure the effectiveness of health and social systems.(27)

Effective nurse leadership is now required to address regional, and local challenges for maintaining long-term nursing workforce stability. In addition, significant steps must be taken by governments to address the critical and growing resource gap of 7.8 million shortage of nurses and midwives worldwide by 2030. This survey identified the recurrent theme in healthcare that there is insufficient staff and inappropriate skill mix to effectively deal with the healthcare burden. As respected collaborators across multidisciplinary teams, nurse leaders can contribute to enhanced quality and safety structures within their organizations.(28)

As identified by the American Nurses Association, foundational leadership competencies include flexibility and the capacity to adapt previously established plans to changing external pressures.(9) Responsive nurse leaders must develop and mature the skills necessary to quickly identify and effectively respond to external threats to health care provision in their communities. These threats include health crises, government decision, and other catastrophic or emergent events.

While respondents reported that less than half of their respective organisations had a COVID-19 workplace plan or protocol in place when the pandemic was declared, almost all (93.4%) had a plan in place at the time of the survey. Most staff (79.9%) reported received infection prevention and control training. However fewer (63.7%) were confident to practice safely because of this training. It is noteworthy that 24.1% of respondents reported being *extremely* concerned about their physical health due to their role.

COVID-19 and the practice environment

Front-line HCWs have an increased risk of contracting COVID-19 compared with the general community, even after allowing for other risk factors with those working in inpatient care where PPE was reused and those in nursing homes with inadequate PPE, having the greatest risk.(29) For example, 20% of COVID-19 cases belonged to HCWs and they were more likely to be infected than the general population in Canada.(22)

Research suggests that approximately one-third of all cases are occurring in HCWs.(30, 31) In this survey, 59.2% of respondents had provided direct care to patients with confirmed COVID-19, and approximately 10.2% of respondents had themselves tested positive for COVID-19 in the past 4 weeks. Almost half of those who tested positive believed they had contracted COVID-19 through workplace exposure. Respondents were not specifically asked if they had tested positive since the pandemic began, so the proportion of those who have tested positive at some point is unknown.

There is an expectation that HCWs are obligated to provide care and treatment to patients, potentially sacrificing their own health and wellbeing, so it is vital that workplaces and governments commit to providing a safe workplace environment in which to practice, including safe and effective vaccines.(32) At the time of the survey most respondents (93.7%) had been vaccinated. For the 6.3% who were not vaccinated, the comparative importance of vaccine availability and vaccine hesitancy are unknown.

Respondents expressed some dissatisfaction with leadership and career opportunities and extrinsic rewards. Furthermore, respondents reported having high levels of emotional and cognitive demand. Job satisfaction is a significant factor in an employee's intention to leave. In this survey over two-thirds of nurses intended to leave their current position within the next five years. Of those, twelve percent intended to exit the profession and approximately 30% planned to retire. Globally, 17% of the nursing workforce are over the age of 55 years and expected to retire within the next 10 years.(27)

For many HCWs, workplace redeployment has become standard operating procedure during subsequent waves of the pandemic, working as part of interdisciplinary COVID-19 teams.(33) In this survey approximately one-third of respondents were asked to work outside of their scope of practice and one in six were redeployed to a different hospital or speciality of work due to COVID-19. Nearly half of respondents reported that their organisation had slightly, moderately or significantly increased staff numbers to cope with extra demand and over a third reported recruiting student nurses to support the regular workforce to cope with demand.

Personal protective equipment

A significant contributor to the high rates of healthcare worker infection early in the pandemic, and an ongoing concern for healthcare workers worldwide, has been the lack of sufficient and appropriate PPE.(34) Requiring nurses to provide treatment and care to patients with insufficient personal protection risks their safety and wellbeing, their ability to work and provide care to the community, and the safety of their loved ones.(35) These issues around PPE have come under considerable public scrutiny and it has been an immense challenge for governments and workplaces to provide adequate and appropriate supplies of PPE for healthcare workers.(36) In March 2020, 87% of HCW in Ontario stated that there was insufficient PPE and a further 91% stated that they felt abandoned by their provisional government.(37) However, at the time of this survey, initial issues of

PPE supply and availability had been mostly addressed, with 90.7% of respondents reported having the right types of PPE. This is higher than that reported in previous international research,(36, 38) which is likely a consequence of the ramping up of supply and addressing distribution challenges that were experienced early into the pandemic.

Ongoing improvements including PPE distribution, standards, and improving wearability and vigilance around respiratory fit testing require attention as the transmissibility of the virus increases with new and emerging variants of the disease. Workplaces have a duty of care to nurses to provide adequate and appropriate PPE.(35) Almost one-third of had reported PPE concerns to their employer and approximately 40% reported not having breaks while working in full PPE. It is imperative that PPE concerns and requirements continue to be addressed by management to ensure the effective control of COVID-19 infections.

Nurse wellbeing and access to support

In addition to workforce concerns, the majority of nurses were concerned with keeping the people they live with and vulnerable family members safe, with about a one-quarter choosing to self-isolate from their families. Similarly, the majority of nurses stated they were concerned with infecting their family members.(39) This supports previous qualitative research in Canada that showed frontline HCWs in Canada were anxious about infecting their family members.(40) A moderate level of work life conflict was reported by all respondents. Having worked through pandemic surges over the past 18 months, it is not surprising that so many are experiencing work-family tension and challenges. Half of all nurses were also concerned about their own psychological wellbeing, and one-fourth had sought mental health wellbeing support. There is a risk to health systems worldwide, as the pandemic timeline grows and new surge events arise, overwhelming health services and their staff.

The personal and professional sacrifices nurses are making during the pandemic have been acknowledged by the general public, with more than two-thirds of respondents having experienced community support for the work they do. However, the majority of respondents had experienced abuse or felt threatened at work, and almost one-quarter had experienced threats or abuse outside of work. The stigmatization of HCW during pandemics is not new; in a random sample of the North American public (Canada and USA, n=3551), results found more than a quarter of the public believed that HCWs should have restrictions placed on their freedoms and more than a third would avoid HCWs for fear of contracting COVID-19.(41)

The pandemic has significantly impacted nurses' wellbeing and burnout. In addition to personal and social elements, workforce factors including organisational and leadership support, and resource and staffing adequacy have heavily influenced nursing wellbeing. International COVID-19 surveys have found that healthcare workers have considerable levels of self-reported stress, anxiety, depression, and even symptoms of post-traumatic stress disorder.(38, 42-44)

Health care workers in general have significantly higher levels of burnout (both exhaustion and disengagement) than white collar workers.(45) In a recent review examining emotional exhaustion and burnout in HCWs during the COVID-19 pandemic , the authors note that the first COVID-19 studies on burnout made comparisons with earlier SARS and MERS outbreaks and found prevalence rates of burnout (about one-third of HCWs) similar with earlier outbreaks.(46) Occupational burnout for exhaustion and disengagement as measured by the OLB in this survey was similar to that in Singapore (47) and Italy (the latter was a study of nurses during the first wave of the pandemic).(48)

Scores across all of these studies are considered to be in the medium to high range for both exhaustion and disengagement.(49)

It is widely recognised that HCWs are at increased risk of poor mental health when dealing with the pandemic, and managers need to proactively take steps to protect the mental wellbeing of staff.(50) Nearly half of respondents rated access to workplace psychological or mental health support as fair to very poor in this survey and less than a quarter had sought well-being support. Similar to findings in this study, research conducted in Canada and Australia found that HCWs experienced post-traumatic stress, depression, anxiety and burnout symptoms during the pandemic.(39, 51) Only about a quarter of HCWs had accessed formal supports.(51) Many countries have dedicated teams to provide mental health support for HCWs, including China, Italy, Spain the UK and USA.(52) Evidence-based psychological support for nurses and nurse leaders during the COVID-19 pandemic is critical and should include strategies and interventions aimed at the individual/peer to peer, teams, and managers and leaders in organisations.(9, 53) Support needs to be tailored to individual need and link to effective services.(9, 52)

Strengths and Limitations

The strengths and limitations of this study should be considered when interpreting the reported results. The survey was cross-sectional in design and may not be representative of the wider nursing workforce. This was also a snapshot survey with self-reported items and measures; responses therefore may be influenced by self-presentation bias and recall errors relating to the beginning of the pandemic. Finally, the majority of analyses for this report were limited to descriptive statistics; consequently, it was not possible to determine the statistical significance of any relationships or group differences, nor was it possible to make causal inferences. Higher level analyses to test statistical relationships and the predictive strength of variables will be undertaken in future research. Further longitudinal research is required to determine causality.

The survey also had a number of strengths. First, while there are inherent limitations to cross-sectional studies, they are an efficient method of gathering data with minimal respondent burden and are effective for gaining insight into the experiences of respondents. There were approximately 5,200 responses to most questions in the survey. While the sample size is small relative to the population from which it is drawn, the respondents were heterogenous, representing a range of organisations, levels in nursing, sectors, job roles and ages. Note while most provinces in Canada were represented, the majority were from Ontario and, in particular, RNs from Ontario. Thus the highest confidence in the results would pertain to Ontario RNs. Nevertheless, the coverage of the survey is sufficiently broad that its results reasonably generalize to the nursing sector and contribute to our understanding of how the organisational environment affects the psychosocial health of its workforce.

Considerations for policy, practice, support and research

Based on the findings of the research conducted here as well as in Australia and internationally, the following considerations are made to advance policy, practice, support and future research directions to address the health, wellbeing, and safety of the nursing workforce. These are high level considerations primarily focused on the leadership, management and coordination, safety, and support and wellbeing of frontline staff. Recommendations for future areas of strategic research are also identified.

Healthcare policy and leadership

1. **Leadership:** Empowering strong nursing leadership in healthcare settings from mid-level clinicians through to the executive level to ensure nurses and their colleagues have a strong voice regarding current challenges and suggestions for improvements to policy and practice of organisations.
2. **Staffing and skill mix:** Achieving both safe staffing and safe skill-mix is essential to respond to post-pandemic needs and future emergencies. This necessitates a comprehensive recruitment and retention strategy to achieve and maintain safe staffing and skill mix.
3. **Risk mitigation:** Learn from the risks identified within the first few weeks of the pandemic to secure a ready supply of basic hygiene and safety equipment designed to protect the health of staff (e.g., PPE), with supply chain logistics and access processes to minimize risk during future pandemic events.
4. **Workforce coordination:** The deployment of staff across the healthcare sector should be considered within the context of minimizing multi-site placements that result in increased risk and exposure for the clinician and community.

The practice and its impact

5. **Education:** Provide standardised, consistent messaging, education and training regarding PPE use, donning, wearing, and doffing that is tailored to the working environment.
6. **Worker safety:** Develop consistent, contemporary policy related to PPE, including breaks from long hours of wearing PPE and long-term use of PPE.
7. **System design:** Design effective systems for the rapid deployment of staff across the healthcare system. Key considerations are to identify and address system or industrial barriers that may hinder movement, flexibility, and protection of workers during a pandemic or other prolonged situations.
8. **Communication:** Provision of consistent, evidence-informed information through trusted communication channels and to relevant staff to ensure accuracy of information and direction.
9. **Prioritise safety:** Active engagement from healthcare administration to ensure the health, wellbeing and safety of staff is prioritised as a business objective.

Wellbeing access and support

10. **Evidence-based support:** Adoption of evidence-based programs designed to provide structured, tailored and meaningful support, and that actively engage staff, especially during times of significant disruption and/or significant trauma. These supports need to be targeted at the most salient risk factors for poor mental health and employee burnout.
11. **Wellbeing monitoring systems:** Systems established to periodically monitor occupational health and wellbeing are adopted as part of business activity reporting, and that include both predictors and performance and organisational risk outcomes of wellbeing. This is to be considered as a standardised approach to the health and wellbeing of staff, pre, during, and post management of a pandemic or significant disruption to the health care environment to monitor impact and staff sustainability.

Strategic research

12. **Longitudinal research:** Large, longitudinal research studies are undertaken (e.g., cohort studies) that apply a theory-guided approach to study the interaction between the health system and the wellbeing of its workforce.
 13. **Cross-sectional monitoring:** Undertake a repeat concise workforce and wellbeing survey biennially. Comparators can be considered both at a national level and with international data.
 14. **Policy research:** a structured program of policy-focused research targeted at the Canadian health sector environment to address current challenges related to workforce sustainability and wellbeing.
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Appendix A: survey methodology

Ethics

Ethical approval for the study was granted by the University of South Australia (UniSA) Human Research Ethics Committee (HREC; Application ID: 203244).

Participants

The survey targeted nurses working in healthcare in Canada. It was not possible to determine a response rate based on those who saw the survey promotion, as it was made promoted widely through various channels including: mass emails to RNAO members; the RNAO website; their member newsletter; CEO's blog; and their social media accounts. The survey was also shared with other nursing professional organizations across Canada, to share with their members. Snowball sampling of the survey to other nurses was allowed.

Procedure

An online, anonymous, cross-sectional survey ran over a 10-week period from 21 May to 31 July 2021. There were approximately 287 questions in the survey. The commencement of the survey coincided with the peak of a wave during May 2021. The survey was developed by RBRC with input from RNAO to ensure relevance and generalisability to the Canadian context. Promotion of the survey was primarily through the RNAO communication channels including its website, social media channels and mass emails to members. Other organisations including ONA, CFNU and Wounds Canada also supported the distribution of the survey across Canada.

Materials

Survey development

The survey tool was first developed by RBRC for use in the Australian context and was intended to cover all healthcare settings. The RNAO provided additional input to survey design to broaden the applicability to other contexts internationally. To this end, questions were made applicable to the Canadian context and each question was reviewed to minimise risk of individuals or groups of respondents not thinking questions were relevant to them.

The survey was developed and formatted in two parts, the first comprising questions about COVID-19 that were generated by the research team or adapted from other surveys, and the second comprising validated tools used to assess workplace climate and occupational wellbeing. The survey was pilot tested with nurses within the close working networks of the RNAO (10 people). The survey was refined based on feedback from pilot testing before final distribution. There were 287 questions in the final survey addressing a range of domains relevant to the working environment and wellbeing of nurses (Figure 77).



Figure 76. Domains assessed within the COVID-19 and Workforce Wellbeing Survey.

Part I: Demographics and COVID-19 factors

Part I of the survey encompassed demographic questions and assessed the impacts of COVID-19 on the work environment, personal concerns, and PPE. For purposes of international benchmarking, healthcare COVID-19 surveys circulating at the time of the survey were reviewed and where appropriate, modified and contextualised for the current survey. These included questions from the following sources: the Italian healthcare survey,(54) the ICON study,(55) the PanSurg SSFAFE Wellbeing Survey,(56) American Nurses Association COVID-19 Surveys,(57) PPE Survey,(36) and National Nurses United Covid-19 Employer Preparedness Survey.(58)

Respondent demographics

Respondents were asked a range of questions that sought socio-demographic information, including gender, age, postal code, relationship status, ethnicity including first nation status, Province/Territory of birth, migration for work, care giving responsibilities, as well as health conditions or COVID-19 risk factors.

Respondents were also asked a range of occupational demographic questions, including: job classification, years worked as a nurse, primary role, employment status, primary workplace, work setting, and Association and Union membership.

COVID-19 preparedness, workplace plans and training

Eight survey items addressed organisational preparedness for the COVID-19 pandemic. One item asked survey respondents to rate their workplace’s preparedness to manage COVID-19 cases when the pandemic was declared on a scale of 1 (*Very poor*) to 6 (*Excellent*). Respondents were also asked about whether their workplace had in place: designated COVID-19 areas, plans and protocols to respond to COVID-19 at the time of the pandemic or currently, and infection control and prevention training. Response options were generally “*Yes*”, “*No*”, “*Unsure*”, and “*Not applicable*”. Those who had received training were further asked to rate their confidence to practice safely because of their training on a scale of 1 (*Not at all confident*) to 5 (*Extremely confident*).

Care for patients/clients with COVID-19 in the workplace

Seven survey items were included to assess whether respondents and/or their workplaces had cared for clients with suspected or confirmed COVID-19, how many suspected or confirmed cases had been cared for in their workplaces, in what settings care had been provided and the estimated patient to nurse ratio.

COVID-19 information

Six survey items assessed the COVID-19 information provided within the workplace, as well as useful outside sources of COVID-19 information. Respondents were asked to rate the COVID-19 information provided within their workplace regarding being timely, trustworthy, clearly written, comprehensive, and consistent with other sources. Response options ranged from 1 (*Very poor*) to 5 (*Excellent*). An additional survey item asked whether respondents had found useful workplace related information regarding COVID-19 from other various sources.

Organisational preparedness

Respondents were asked to rate the quality of their primary workplaces' COVID-19 policies and procedures in 18 different areas (e.g., staff screening for risk factors/symptoms, support for new graduates or inexperienced staff, managing staff abuse). Response options ranged from 1 (*Very poor*) to 6 (*Excellent*). Respondents were also permitted to select '*Don't know*' or '*Not applicable*'.

COVID-19 health concerns around work, staff testing, and missed work

Respondents were asked a range of questions about their COVID-19 related health concerns and experiences with COVID-19 testing. Four questions asked respondents to rate their concern about risks to their physical and mental health due to COVID-19 at the start of the pandemic and at the time of the survey on a scale of 1 (*Not at all concerned*) to 5 (*Extremely concerned*). Respondents were also asked several questions about whether they had been tested for COVID-19 (*Yes/No*), whether they had tested positive (*Yes/No/Decision pending*), whether they believed the virus was acquired due to workplace exposure (*Yes/No/Unsure*), and whether they had experienced any work-related distress associated with a positive result (*Yes/No*). Respondents were also asked how many times they had been tested, if they had missed work for COVID-19 related reasons, what type of leave they took to cover missed days, and if they had been vaccinated for COVID-19.

Personal concerns due to COVID-19 and mental health support

Respondents were asked to what level they were concerned about seven personal factors (e.g., psychological wellbeing, risks to vulnerable family members/people I live with, experiencing financial hardship) and ten work-related factors (e.g., welfare of my colleagues, job security in general, staffing levels). Responses ranged from 1 (*Not at all concerned*) to 5 (*Extremely concerned*). Respondents were asked one binary response (*Yes/No*) question about whether they had sought mental health/wellbeing support from external providers, and one check box question about the service(s) they sought help from.

Self-isolation and related behaviours

Four items addressed self-isolation among respondents. Two binary response questions asked respondents whether they chose to isolate from those they live with (*Yes/No*), and whether that isolation was at their own residence or at an alternative accommodation. One multiple choice question addressed who paid for any alternative accommodation. Respondents were given the opportunity to describe any other self-isolating behaviours they felt they had to adopt to protect themselves, their family/friends, or the community.

Community support and harassment

Three survey items addressed community support and harassment. Respondents were asked whether they had experienced or felt community support for their work, whether they had experienced abuse or felt threatened by members of the public/clients at work, and whether they

had experienced abuse or felt threatened by members of the public in settings outside of work. Response options were “Yes”, “No”, “Unsure”.

Workplace changes

Respondents were asked sixteen questions about workplace changes, including workload changes (four items), give up work (four items), working outside of or advancing scope of practice (three items), work schedule changes (two items), and redeployment (three items).

Personal protective equipment (PPE) at primary workplace

A mix of eleven multiple choice and open-ended survey questions addressed PPE at respondents’ primary workplaces. Questions addressed the types, size, and amount of PPE, workplace policies and processes related to PPE, re-use of PPE, reporting of PPE concerns to employers, support received from employers regarding PPE concerns, the adequacy of resources and staff to delivery PPE training, and confidence that the PPE training equipped respondents to practice safely during the pandemic.

Hours worked and Intentions to leave

Respondents were asked twelve questions related to hours worked per week (five items), double-shifts per month (two items), intentions to leave one’s current position or the profession entirely (three items), incentives to stay in the nursing workforce (1 item), retirement status and incentives to defer retirement (two items).

Part II: Workforce climate

Part II of the survey assessed domains of workforce climate. Domains included the nursing practice environment, psychosocial workplace conditions, occupational demand and resources, job satisfaction, resilience, burnout, and mental health. Domains were measured using previously validated questionnaires and subscales.

Practice environment

A modified version of the Practice Environment Scale – Nursing Work Index (PES-NWI)(12) was included in the survey to assess the nursing practice environment. Respondents were asked the extent to which they agreed that certain desirable aspects of the practice environment were present in their current workplace, including nursing leadership (4 items; e.g., “A Director of Nursing which is highly visible and accessible to staff”), adequate staffing and resources (3 items; e.g., “Adequate support services allow me to spend time with my patients”), praise and supervisory support (3 items; “A supervisory staff that is supportive of the nurses”), and a nursing philosophy for quality care (3 items; e.g., “A clear philosophy of nursing that pervades the patient care environment”). Scale response options ranged from 1 (*Strongly agree*) to 4 (*Strongly disagree*).

Response options were reverse coded prior to scoring so that higher scores indicated greater agreement that the aspect of the practice environment was present in the workplace. Following this, item scores were averaged for each subscale (score range 1 – 4). A mean score of 2.5 reflected the neutral mid-point (i.e., neither agreement nor disagreement), while scores above 2.5 showed agreement and scores below 2.5 disagreement. Respondents with only one missing item on the nursing leadership subscale were retained for subscale scoring (i.e., available item analysis). Subscale scores were not calculated for respondents with missing data on the remaining practice environment subscales because of the small number of subscale items. The adapted subscales were found to have good internal consistency (α range: .81 - .89).

Psychosocial workplace conditions

The Copenhagen Psychosocial Questionnaire Version 3 (COPSOQ-III)(13) was used in the survey to assess psychosocial workplace conditions and demands. There are short, medium, and long versions of the COPSOQ-III, with the long version containing eight domains and 45 scales. Four domains and eight scales were included in this research (). Respondents answered COPSOQ-III items on 5-point interval scales; values ranged from 0 – 100 and response options varied across survey questions (e.g., *Always* [100] to *Never/hardly ever* [0], *A very large extent* [100] to *A very small extent* [0]). Each scale was scored in the direction of the construct being measured, consequently one quantitative demand item was reverse coded prior to scoring. Mean scores were calculated for scales with more than one item (score range: 0 – 100). Scores were not calculated for respondents with missing data because of the small number of items for each scale. Internal consistency ranged from acceptable to high across subscales (α range: .60 - .91; Table 15).

Table 15. COPSOQ-III domains and scales included in the COVID and Wellbeing Survey

Domain	Scales	N items	α	Definition
Demands at work	Quantitative demands	3	.60	How much work is expected to be satisfactorily completed at work
	Work pace	2	.80	How fast work tasks need to be performed
	Cognitive demands	3	.81	Work tasks that require cognitive effort
	Emotional demands	3	.81	Work involves dealing with other people's feelings
Interpersonal relations and leadership	Role clarity	2	.77	Understanding of role at work
	Role conflicts	2	.81	Conflicting demands within a task or conflict when prioritising work tasks
Work-individual interface	Work life conflict	3	.91	Consequences of work for private life
Health and wellbeing	Self-rated health	1	-	Assessment of own general health over the past four weeks

Job satisfaction

A modified version of the McCloskey/Mueller Satisfaction Scale (MMSS)(14) was used to measure job satisfaction among respondents. Fourteen items assessed level of satisfaction with four job characteristics, including extrinsic rewards (3 items; e.g., satisfaction with salary/wages), collegial relationships (3 items; e.g., satisfaction with opportunities for social contact at work), work scheduling and flexibility (4 items; e.g., satisfaction with compensation for working weekends), and leadership and career opportunity (4 items; e.g., satisfaction with opportunities for career advancement). Items were measured on a 5-point Likert-type scale ranging from *Very dissatisfied* (5) to *Very satisfied* (1).

Responses to MMSS items were reverse coded prior to scoring so that higher scores indicated greater satisfaction in line with the original measure,(14) and then item scores were averaged for each subscale (score range 1 – 5). Respondents were retained for scoring if they were missing only one item for subscales with four items; scores were not calculated for respondents with missing data

on the shorter three item subscales. The revised subscales showed good internal consistency (α range: .76 - .86).

Resilience

Resilience was measured using the Brief Resilience Scale (BRS).(17) This short 6-item scale measured the ability to bounce back from stressful experiences. Respondents were asked the extent to which they agreed with items (e.g., “It is hard for me to snap back when something bad happens”) on a 5-point Likert-type scale, ranging from 1 (*Strongly disagree*) to 5 (*Strongly agree*). Three negatively worded items were reverse coded before calculating the mean (score range: 1 – 5). Respondents with only one missing item on the scale were retained during scoring. Scores may be interpreted using the following cut-offs: < 3 = low resilience, 3 to 4.3 = average resilience, and > 4.3 = high resilience.(18) Internal consistency for the scale was high ($\alpha = .89$).

Depression, anxiety, and stress

The 21-item Depression Anxiety Stress Scale (DASS-21)(19) was used to measure self-reported depression (7 items; i.e., low or dysphoric mood), anxiety (7 items; i.e., physical arousal, panic, and fear) and stress (7 items; i.e., tension, intolerance, and overreaction to adverse experiences). Respondents were asked to indicate to what extent statements applied to them over the last week on a scale of 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). Subscale item scores were summed and multiplied by two (score range: 0 – 42) to enable comparison with the full 42-item DASS measure. Respondents who were missing only one item on a subscale were retained for scoring and case mean substitution was used to replace the missing value prior to calculating the total score. Higher subscale scores indicate greater symptom severity, with scores rated as normal, mild, moderate, severe, and extremely severe based on a normative sample¹ (see Lovibond and Lovibond(20) for score ranges). Internal consistency was high across the three subscales (α range: .86 - .92).

Work engagement

Work engagement was measured using the brief version of the Utrecht Work Engagement Scale (UWES-9).(15) Nine items measure frequency of occurrence across three areas of work engagement: vigour (3 items; e.g., “At work I feel bursting with energy”), dedication (3 items; e.g., “My job inspires me”), and absorption (3 items; e.g., “I am immersed in my work”). Items were measured on a 6-point scale ranging from *Never* (0) to *Always/Every day* (6).

Response items were scored so that higher scores indicated greater frequency of occurrence, and then averaged for each subscale. Respondents were retained for scoring if they were missing only one item (i.e., two of three items complete per subscale). The subscales showed good internal consistency (α range: .72 - .87).

Burnout

Burnout was measured using the most recent version of the Oldenburg Burnout Inventory (OLBI; 16) which is job-related but not occupationally specific (e.g., items do not reference working with people). The OLBI contains two subscales: disengagement (8 items) and exhaustion (8 items). The disengagement subscale assesses negative attitudes towards and disconnection from work. The exhaustion subscale assesses emotional, physical, and cognitive strain. Respondents were asked to indicate their degree of agreement with each of the items on the scale, with response options

¹ Please note, severity ratings do not indicate more severe disorders.

ranging from 1 (*Strongly agree*) to 4 (*Strongly disagree*). Four items on each subscale were reverse coded before scoring so that higher subscale scores reflected greater burnout. Afterward, mean subscale scores were calculated (score range: 1 – 4). Respondents with only one missing item on each subscale were retained during scoring. Internal consistency was good for both the exhaustion subscale ($\alpha = .87$) and the disengagement subscale ($\alpha = .83$). To formulate the four burnout groups, scores ≥ 2.25 is high exhaustion and scores ≥ 2.1 is considered as high.(49)

Classification	
Non-burnout	Low exhaustion and low engagement
Disengaged	Low exhaustion and high engagement
Exhausted	High exhaustion and low disengagement
Burnout	High exhaustion and high disengagement

Data analysis

Quantitative data analyses were performed using Statistical Package for Social Sciences (SPSS) v24.0.(59) Descriptive analyses were performed on survey items, with valid percent reported throughout. Where applicable, the mean (*M*) and standard deviation (*SD*) were calculated and reported.

BACK COVER

Rosemary Bryant AO
Research Centre

University of South Australia
City East Campus, Playford Building
North Terrace
Adelaide, SA 5000

T +61 8302 2129
W unisa.edu.au/research/rbrc
E rbrc@unisa.edu.au