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## Psychological Wellness of Advanced Practice Provider and Physician Hospitalists During the COVID-19 Pandemic

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### Abstract

**Objectives:** Hospitalists, comprised of advanced practice providers (APPs) and physicians, manage patients hospitalized with COVID-19. To guide the development of support programs, this study compared the psychological wellness of hospitalist APPs and physicians during the COVID-19 pandemic.

**Methods:** We surveyed hospitalists in 16 hospitals at Mayo Clinic, from May 4–25, 2020. We used PROMIS® surveys for self-reported global well-being (2, single-item measures), anxiety, social isolation, and emotional support, prior to and during the pandemic. Linear and logistic regression models were adjusted for personal and professional factors.

**Results:** The response rate was 52.2% (n=154/295). In adjusted linear regression models, the change in scores (prior minus during pandemic) for anxiety, social isolation, and emotional support was similar between APPs and physicians. In adjusted logistic regression models, physicians, compared with APPs, had a higher odds of top global well-being for mental health (adjusted odds ratio [95% confidence interval]: 2.82 [1.12, 7.13];  $P=0.03$ ) and top global well-being for social activities and relationships (adjusted odds ratio 4.08 [1.38, 12.08];  $P=0.01$ ).

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#### CONFLICT OF INTEREST

The authors report no conflicts of interest.

**Conclusions:** During the COVID-19 pandemic, global well-being was lower for APPs compared with physician hospitalists. These results can guide support programs for hospitalists.

### Keywords

hospital practice; advanced practice providers; psychological well-being; staff support; burnout

## INTRODUCTION

In 2020, SARS-CoV-2 Coronavirus Disease (COVID-19) disrupted the global healthcare workforce by compromising both stable and unstable delivery platforms with an immediate demand for skill adaptation, process innovation, and unrestrained productivity. As the COVID-19 pandemic emerged, frontline healthcare providers were challenged by the rapid spread of an infectious entity while dealing with both a suboptimal supply of personal protective equipment (PPE) as well as no proven treatment protocols. Consequently, many providers reported psychological conditions including depression (25%–50%), anxiety (49%–57%), guilt, fear and insomnia (45%).<sup>1–6</sup> Compounded by other contributors such as social isolation, an overwhelming workload, and caregiver fatigue, the prevalence of burnout increased within all levels of the healthcare environment.<sup>7–9</sup>

Historically, much attention on psychological wellness of healthcare providers has focused on physicians and nurses. However, advanced practice providers (APPs), comprised of physician assistants (PAs) and nurse practitioners (NPs), have played a critical role during the COVID-19 pandemic. Equipped with a broad set of skills adaptable to both inpatient and outpatient settings, APPs were deployed across the United States (US) to address acute staff shortages and manage COVID-19 cases from frontline positions. The demands of that mass mobilization came at considerable cost. A survey from the American Academy of Physician Assistants revealed that approximately 50% were regularly treating COVID patients and 10% of PAs changed practice settings due to COVID-19.<sup>10</sup> Approximately one-third of PAs described working without the necessary PPE, including an alarming 39% of those working directly with COVID-19 patients. Financial insecurities were brought on by furloughs (22%), work-hour reductions (59%), and pay reductions (31%) at many medical practices.<sup>10</sup> A cross-sectional survey in New York during the height of the pandemic compared responses between physicians and APPs/nurses.<sup>3</sup> In that study, APPs/nurses, compared to physicians, were more likely to experience acute stress (64% vs. 40%), depression (53% vs. 38%), anxiety (40% vs. 15%), and loneliness.<sup>3</sup> APPs/nurses averaged 5.6 hours of sleep per day, with 71% reporting moderate to severe sleep problems. The study analyzed nurses (n=313) and APPs (n=48) as a single group, and differences between physician and APP responses were not reported.<sup>3</sup>

During the COVID-19 pandemic, hospitalists, comprised of APPs and physicians, were the primary service line to manage patients hospitalized with COVID-19. At our institution, APPs and physicians work in teams (e.g., 1 APP and 1 physician) with each providing direct care to hospitalized patients. APPs and physicians have similar roles and responsibilities (e.g., place orders, engage with specialty services, and discharge patients); similar to APPs, physicians provide direct care to patients and additionally serve in a consulting/supervisory

capacity to APPs. To date, little is known if the psychological stress of COVID-19 impacted hospitalist APPs and physicians differently, possibly due to demographic differences in age (on average, APPs are younger than physicians), gender (on average, more APPs than physicians are women) or other factors (e.g., weeks worked during the pandemic). Given demographic differences between APPs and physicians and concern about the personal and professional impact of COVID-19, we hypothesized that APPs and physicians experience the pandemic differently and may benefit from tailored interventions. To address this knowledge gap in hospital medicine, we surveyed hospitalist APPs and physicians at a single institution with 16 hospitals in four US states. We surveyed hospitalists on global well-being, anxiety, social isolation, and emotional support to guide the development of profession-specific interventions for psychological wellness.

## METHODS

The study was conducted by the Hospital Experiences to Advance Goals and Outcomes Network (HEXAGON) group at Mayo Clinic.<sup>11–14</sup> It was deemed to be ‘Exempt’ under 45 CFR 46.101, by the Mayo Clinic Institutional Review Board (IRB# 20-003824).

### Survey Timeline, Sites and Participants

We conducted a single survey with questions on personal wellness during two periods: before the pandemic (prior to March 15, 2020) and during the pandemic (March 15 through April 30, 2020). The survey was conducted from May 4 – May 25, 2020.

The survey sites were Mayo Clinic in Rochester, MN, Jacksonville FL, Scottsdale AZ, and Mayo Clinic Health System hospitals in Minnesota (Albert Lea/Austin, Cannon Falls, Fairmont, Lake City, Mankato, Owatonna, and Red Wing) and Wisconsin (Barron, Bloomer, Eau Claire, La Crosse, Menomonie, and Osseo), as previously described.<sup>11,12</sup> The survey sites (Rochester, Jacksonville, Scottsdale, and Mayo Clinic Health System) were randomly labeled A–D and not identified. Full-time and part-time hospitalists (total n = 295) comprised of APPs (n = 109) and physicians (n = 186) at the survey sites were eligible to participate.

### Survey Development and Administration

We surveyed hospitalists on demographics, work hours, and living situation to evaluate personal and professional factors that influence psychological wellness (Appendix 1).<sup>13</sup> To assess global well-being, anxiety, social isolation, and emotional support, we used validated Patient-Reported Outcomes Measurement Information System (PROMIS®) surveys (Appendix 1).<sup>15</sup> Global well-being was assessed using 2, single-item measures (PROMIS Scale v1.2 – Global Mental 2a) assessed on a 5-point Likert scale (excellent, very good, good, fair, poor).<sup>16</sup> Anxiety (Neuro-QoL Short Form v1.0 – Anxiety)<sup>17–19</sup> and Social Isolation (PROMIS Short Form v2.0 – Social Isolation – 8a)<sup>20,21</sup> domains were assessed using eight questions each (score range: 8–40). Emotional support (score range: 13–65) was assessed using 13 questions, of which, 12 were from the PROMIS Item Bank v2.0 – Emotional Support computerized adaptive test.<sup>21,22</sup> One additional question was developed and surveyed by the authors (“I got emotional support from my colleagues”). Responses for

anxiety, social isolation, and emotional support were assessed on a 5-point scale (never, rarely, sometimes, usually, and always). The survey was administered using Research Electronic Data Capture (REDCap®).<sup>23,24</sup> Each hospitalist received a unique survey link, with up to two weekly reminders. Participation was voluntary and not compensated.

De-identified responses were exported from REDCap® for statistical analysis.

## Data Analysis

Participant characteristics were reported using descriptive statistics. Scores for each domain (anxiety, social isolation, and emotional support) were calculated by transforming the scale into a value from 1 to 5 and summing all components, as described.<sup>13</sup> Paired t-tests were used to determine the difference between pre-pandemic and during pandemic scores, reported as mean difference (95% confidence interval [95% CI]).

PROMIS scores can be converted to T-scores, standardized with mean 50 (standard deviation 10), to facilitate comparison across studies.<sup>19,20,22</sup>

Global well-being during the pandemic was evaluated using separate logistic regression models for the following 2, single-item measures: (i) global well-being: mental health and (ii) global well-being: social health and relationships, and reported as odds ratio (95% confidence interval). We categorized global well-being in the top category (excellent or very good) vs. other category (good, fair, or poor). We included 'good' with 'other' because the outcome of interest was top global well-being. The models were adjusted for age (two categories: <40 years [referent group]; 40 years), gender (two categories: women [referent group]; men/other), profession (two categories: APP [referent group]; physician), weeks worked during pandemic (two categories: <4 weeks; 4 weeks [referent group]), concern about contracting COVID-19 at work (two categories: strongly agree or agree; other (neutral, disagree, or strongly disagree) [referent group]), living situation prior to pandemic (three categories: lived alone [referent group]; 1–4 members; 5–10 members), and survey site (four categories: A [referent group], B, C, D). The 'referent group' (by convention, equivalent to code '0') against which other groups were compared is indicated in the relevant table.

Anxiety, social isolation, and emotional support were evaluated by change in scores from 'prior to pandemic' to 'during pandemic' using separate multiple linear regression models with the following covariates: age (two categories: <40 years [referent group]; 40 years), gender (two categories: women [referent group]; men/other), profession (APP [referent group]; physician), weeks worked during pandemic (two categories: <4 weeks; 4 weeks [referent group]), concern about contracting COVID-19 at work (two categories: strongly agree or agree; other (neutral, disagree, or strongly disagree) [referent group]), living situation prior to pandemic (three categories: lived alone [referent group]; 1–4 members; 5–10 members), and survey site (four categories: A [referent group], B, C, D). Results from the regression models are reported with point estimates (95% confidence interval). The 'referent group' against which other groups were compared is indicated in the relevant table.

Data were analyzed using SAS® 9.4 (SAS Institute Inc., Cary, NC), with statistical significance at 2-tailed  $P < 0.05$ .

## RESULTS

The survey response rate was 64.2% for APPs (n=70/109) and 45.2% for physicians (n=84/186), with a higher proportion of women among APPs (78%) compared with physicians (38%) ( $P < 0.001$ ) (Table 1). There were participants from all survey sites: Arizona (n=31), Florida (n=19), Rochester (n=70), and Mayo Clinic Health System (n=34). The survey respondents included more physicians (54.5%; n=84/154) than APPs (45.5%; n=70/154). Compared to physicians, a higher proportion of APPs worked 4 weeks during the pandemic but were similarly concerned about contracting COVID-19 infection at work. A similar proportion of APPs and physicians reported 'excellent or very good' global well-being prior to the pandemic (>85% for both groups in unadjusted analysis). However, during the pandemic, the proportion of respondents reporting 'excellent or very good' global well-being was lower (Table 1 and Supplementary Table 1) and the proportion of APPs reporting 'excellent or very good' global well-being was significantly lower than for physicians (APPs vs. physicians: 37% vs. 66% for global mental health in unadjusted analysis [ $P = 0.001$ ]; 10% vs. 36% for global social activities and relationship in unadjusted analysis [ $P < 0.001$ ]) (Table 1).

### Anxiety

Prior to the pandemic, APPs and physicians had similar mean scores for anxiety (Table 2). During the pandemic, the mean score for anxiety increased more for APPs ( $14.6 \pm 4.2$  [prior to pandemic] to  $20.5 \pm 6.2$  [during pandemic]) than for physicians ( $13.9 \pm 4.2$  [prior to pandemic] to  $17.9 \pm 5.8$  [during pandemic]), indicating higher anxiety among APPs vs. physicians during the pandemic ( $P = 0.01$ ). The corresponding T-scores for APPs changed from  $51.5 \pm 6.5$  (pre-pandemic) to  $58.5 \pm 7.4$  (during pandemic); for physicians, it changed from  $50.2 \pm 7.1$  (pre-pandemic) to  $55.6 \pm 7.2$  (during pandemic). In adjusted multiple linear regression models, women (compared to men/other), and concern about contracting COVID-19 at work (strongly agree or agree vs. other) were independently associated with higher anxiety during the pandemic, whereas other factors showed neutral association with change in anxiety (Table 3).

### Social isolation

Prior to the pandemic, APPs and physicians had similar mean scores for social isolation, as observed for anxiety (Table 2). The mean score for social isolation increased more for APPs ( $12.9 \pm 4.4$  [prior to pandemic] to  $18.0 \pm 6.6$  [during pandemic]) than for physicians ( $12.2 \pm 4.7$  [prior to pandemic] to  $15.1 \pm 6.6$  [during pandemic]) ( $P = 0.004$ ). The corresponding T-scores for APPs changed from  $43.6 \pm 7.1$  (pre-pandemic) to  $50.3 \pm 8.2$  (during pandemic); for physicians, it changed from  $42.3 \pm 7.6$  (pre-pandemic) to  $46.4 \pm 8.7$  (during pandemic). However, in adjusted multiple linear regression models, all factors, including profession, showed neutral association with change in social isolation (Table 3).

### Emotional support

Prior to the pandemic, APPs and physicians had similar mean scores for emotional support, as observed for anxiety and social isolation (Table 2). During the pandemic, the mean score for emotional support for APPs and physicians did not change. In multiple linear regression models for the change in 'emotional support', living with 1–4 people prior to pandemic vs. alone (–3.00 [95% CI, –5.13, –0.88]) and living with 5–10 people prior to pandemic vs. alone (–4.45 [95% CI, –7.40, –1.50]) were associated with improved emotional support whereas other factors showed neutral association (Table 3).

### Global well-being (mental health)

In adjusted logistic regression models using a single-item measure for global well-being: mental health, physicians had a higher odds of top global well-being for mental health during the pandemic compared to the referent group of APPs (adjusted OR 2.82 [95% CI, 1.12, 7.13];  $P=0.03$ ), whereas other factors showed neutral association (Table 4). In adjusted models, survey site showed neutral association with odds of top global well-being for mental health during the pandemic (Table 4). The Cox-Snell  $R^2$  for the overall model was 0.26.

### Global well-being (social activities and relationship)

In adjusted logistic regression models using a single-item measure for global well-being: social activities and relationship, physicians had a higher odds of top global well-being for social activities and relationships during the pandemic compared to the referent group of APPs (adjusted OR 4.08 [95% CI, 1.38, 12.08];  $P=0.01$ ) (Table 4). Similarly, hospitalists aged  $\geq 40$  years had a higher odds of top global well-being for social activities and relationships during the pandemic compared to the referent group of hospitalists  $<40$  years (adjusted OR 2.77 [95% CI, 1.15, 6.65];  $P=0.02$ ), whereas other factors showed neutral association. Survey site showed neutral association with odds of top global well-being for social activities and relationships similar to that observed for global well-being (mental health) (Table 4). The Cox-Snell  $R^2$  for the overall model was 0.17.

## DISCUSSION

This is the first study to compare the psychological wellness between APP and physician hospitalists. During the pandemic, physicians, compared to APPs, had a 2–4 higher odds of top global well-being for mental health and global well-being for social activities and relationships. Compared to APPs, physicians had a significantly smaller increase in anxiety and social isolation. However, in models adjusted for personal and professional factors, the profession-specific difference was abrogated. APPs and physicians had a similar change in emotional support. Among other factors, gender (women vs. men/other) and concern about contracting COVID-19 at work were associated with higher anxiety during the pandemic, whereas living situation prior to the pandemic (living with 1–4 people vs. alone; living with 5–10 people vs. alone) was associated with improved emotional support during the pandemic.

In a study at a New York hospital, a higher percentage of APPs/nurses reported acute stress disorder, depression, and anxiety compared to physicians.<sup>3</sup> Of the 361 APPs/nurses,

87% were nurses, and differences between APPs and physicians were not reported. In addition, the survey tools and providers (e.g., from emergency department, general medicine, intensive care unit) differed from the present study, which may have contributed to different observations. In the present study, in adjusted models, the odds of global well-being were lower in APPs compared to physicians, but changes in scores for anxiety, social isolation, and emotional support were similar. The American Association of Nurse Practitioners (AANP) surveyed nurse practitioners in May and July 2020. Compared to the May survey, more respondents in the July survey reported infection with COVID-19 (2% vs. 5%); and, many reported working without necessary personal protective equipment.<sup>25</sup> The American Association of Physician Assistants (AAPA) surveyed physician assistants in May 2020.<sup>10</sup> In that survey, 72% reported being worried about their or their family's health, 59% experienced reduced work hours, and 4% were infected with COVID-19.<sup>10</sup> The Physicians Foundation survey revealed that 12% of physicians switched to a primarily telemedicine service and 43% reduced their staff due to COVID-19.<sup>26</sup> There is no national survey comparing responses among diverse providers using the same survey tool, and it is challenging to compare responses from different survey tools deployed at different time periods. In the present study, APPs and physicians were similarly concerned about contracting COVID-19 at work and were similarly involved in caring for COVID-19 patients. While national studies are important to gauge national trends, they may not reveal sub-national (i.e., local or institution) trends better suited to developing interventions.

The drivers of APP and physician differences in global well-being based on 2, single-item measures are unclear and require further study. A previous study compared the responses of nurses with other medical providers (included physicians and APPs) and showed that stress contributed to a 4-fold higher risk of nurses contemplating resignation.<sup>27</sup> Nurse Practitioners experienced anxiety-related symptoms related to PPE and 'management approachability'.<sup>28</sup> These studies support other observations that healthcare workers experience significant stress and burnout that affect their psychological wellness.<sup>27-35</sup> In the present study, at an institutional level, there was no profession based difference in access to PPE, COVID-19 related education, or resources for support. However, given demographic differences between APPs and physicians, and potential difference in the personal and professional impact of COVID-19, we examined if APPs and physicians experienced the COVID-19 pandemic differently. It is possible that other unmeasured personal or professional factors contributed to global well-being. Further studies, in particular, qualitative studies including individual open-ended interviews or focus groups, may identify factors not captured through traditional surveys. Given differences between APPs and physicians, APPs may benefit from tailored support (e.g., through their program leadership or anonymous support) at the institution. Many meetings are moving to incorporate platforms to anonymously post comments or questions and thereby provide additional venues to share concerns and receive help.

In the present study, APPs and physicians showed no difference in scores for change in anxiety, social isolation, and emotional support in models adjusted for personal and professional factors. Women, compared to men, had a greater increase in anxiety during the pandemic. A previous study showed that women physicians, compared to men, had a higher odds of emotional exhaustion and low personal accomplishment.<sup>36</sup> In addition, physicians

belonging to ethnic minority groups were at a higher risk of burnout.<sup>36</sup> In this study, the majority of APPs and physicians were White and we did not obtain information on race and ethnicity. Future studies are required to see if/how race and ethnicity influence psychological wellness.

This study has potential limitations. The response rate was 52%, and the responses may not reflect the experience of non-responders. There were more women among APPs compared to physicians and other gender-based confounders may not have been adjusted. This was a single survey with questions on wellness during two periods (prior to pandemic, and during the pandemic) with the potential for recall bias. Given that global well-being was measured on a five point-scale, we *a priori* defined 'top global well-being' as a composite of the top two categories (excellent; very good) and 'other global well-being' as a composite of the lower three categories (good; fair; poor), in which, 'good' and 'fair or poor' reflect neutral and suboptimal responses, respectively. However, studies may combine 'good' with the top two categories, or analyze the responses in the native, five categories. Other unmeasured personal and professional factors may have affected providers' psychological wellness. We did not adjust for the state-level burden of COVID-19. This study surveyed hospitalists at 16 sites in four US states, thereby improving generalizability of the findings. However, all sites were within the same institution, and the shared culture may have increased homogeneity in responses and may not reflect perspectives at other institutions. This study has strengths as it provides a foundation to develop programs and assess their impact through longitudinal follow-up surveys. This study also provides a mechanism to assess long-term sequelae including hospitalist burnout.

Institutions play an important role in supporting colleagues during the pandemic. For instance, at our institution, Healing the Emotional Lives of Peers (HELP) program and Office of Staff Services provide ongoing staff support. To create a supportive work environment during the pandemic while also following public health guidelines, the institution created designated break rooms to provide opportunities for social interaction while socially distancing; departmental leadership remained available to support colleagues and address unique, personal stressors. Leadership increased support for providers through childcare assistance (e.g., identifying community resources; colleagues assisting with childcare needs) and flexible leave policies. In addition, visitor policies were changed to restrict the number of visitors for hospitalized patients, which eased the staff burden, and institution-wide virtual group communication increased on a daily or weekly basis as needed. Virtual group communication included institutional status updates, as well as information and 'how to' guides for staff. In parallel, national and regional societies increased resources for profession-specific personal and professional support.<sup>37,38</sup> Recent literature reviews suggest that workplace interventions (e.g., training, communication), psychological support interventions, and multifaceted interventions, may support resilience among frontline workers.<sup>39</sup> Future studies are required to tailor interventions to local circumstances and develop supportive programs for hospitalists. In this context, results from the present study support targeted interventions for women and hospitalists <40 years of age.

As hospitalists balance multiple personal (e.g., increased home-based learning for children) and professional (e.g., change in COVID-19 burden) changes, the long-term consequences



on burnout, attrition, and change in profession are unknown. The availability of COVID-19 vaccines to reduce COVID-19 infection and the emergence of experimental therapies signal that the COVID-19 burden may reduce over time. Until such time, individuals and institutions have an important role to support each other, their families, and patients to mitigate the physical, psychological, and emotional stress of the pandemic.

## CONCLUSIONS

This single institution study of hospitalists at 16 hospitals in four US states revealed greater decline in global well-being (i.e., based on 2, single-item measures) among APPs compared to physicians during the COVID-19 pandemic. There were independent associations of gender with change in anxiety, age with global wellbeing (social activities and relationships), and profession with global well-being (mental health; social activities and relationships). As the COVID-19 burden changes, it will be imperative to monitor longitudinal changes in psychological wellness of hospitalists. Qualitative studies are required to understand psychological stressors not captured in traditional surveys. Collectively, this information can guide programs to mitigate psychological stress and burnout among hospitalists.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

## FUNDING

The funders had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication. The findings do not necessarily represent the views of the funders.

## Appendix 1

Psychological Wellness of Advanced Practice Provider and Physician Hospitalists During the COVID-19 Pandemic

1. Select your age group
  - 20 yrs to < 30 yrs
  - 30 yrs to < 40 yrs
  - 40 yrs to < 50 yrs
  - 50 yrs to < 60 yrs
  - 60 yrs to < 70 yrs
2. Select your gender
  - Female
  - Male
  - Non-binary/other

- Prefer not to respond
3. Select your main practice site
    - Arizona
    - Florida
    - Mayo Clinic Health System (MCHS)
    - Rochester
  4. (If selects MCHS in Q3) What is the primary MCHS site where you practice?
    - Albert Lea
    - Austin
    - Baron
    - Bloomer
    - Cannon Falls
    - Eau Claire
    - Fairmont
    - Lacrosse
    - Lake City
    - Mankato
    - Menomonie
    - Osseo
    - Owatonna
    - Red Wing
  5. Select your current role
    - Physician Assistant
    - Nurse Practitioner
    - Physician
  6. From March 15<sup>th</sup> – April 30<sup>th</sup>, how many weeks did you work (i.e., patient care, education, or administrative work) at the hospital?
    - None
    - 1 week
    - 2 weeks
    - 3 weeks
    - 4 weeks

- 5 weeks
  - 6 weeks
7. Are you supplemental staff?
- Yes
  - No
8. From March 15<sup>th</sup> – April 30<sup>th</sup>, did you provide care to patients with known or suspected Covid-19 infection?
- Yes
  - No
9. While at work, you were concerned about contracting Covid-19 infection
- Strongly disagree
  - Disagree
  - Neutral
  - Agree
  - Strongly disagree
10. What was your primary source of information on the Covid-19 infection?
- News websites
  - Social media platforms
  - Institutional resources
  - Discussions with family and friends
  - Other
11. Prior to the pandemic (i.e., before March 15<sup>th</sup>), how many people lived with you at home?
- I lived alone
  - 1 to 4 people
  - 5 to 10 people
  - More than 10 people
12. From March 15<sup>th</sup> – April 30<sup>th</sup> (during the pandemic), how many people lived with you at home?
- I lived alone
  - 1 to 4 people
  - 5 to 10 people
  - More than 10 people

13. (if answers b-d on Question 11) From March 15<sup>th</sup> – April 30<sup>th</sup>, who lived with you at home? (select all that apply)
- Children
  - Parents
  - Spouse/partner/significant other
14. From March 15<sup>th</sup> – April 30<sup>th</sup> (during the pandemic), did you change where you lived out of fear of transmitting Covid-19 to family members?
- Yes
  - No

## GLOBAL WELL-BEING

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

1A. In general, how would you rate your mental health, including your mood and your ability to think?

Excellent  Very good  Good  Fair  Poor

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

1B. In general, how would you rate your mental health, including your mood and your ability to think?

Excellent  Very good  Good  Fair  Poor

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

2A. In general, how would you rate your satisfaction with your social activities and relationships?

Excellent  Very good  Good  Fair  Poor

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

2B. In general, how would you rate your satisfaction with your social activities and relationships?

Excellent  Very good  Good  Fair  Poor

## ANXIETY

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

1A. I felt uneasy

Never  Rarely  Sometimes  Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

1B. I felt uneasy

Never  Rarely  Sometimes  Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

2A. I felt nervous

Never  Rarely  Sometimes  Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

2B. I felt nervous

Never  Rarely  Sometimes  Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

3A. Many situations made me worry

Never  Rarely  Sometimes  Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

3B. Many situations made me worry

Never  Rarely  Sometimes  Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

4A. My worries overwhelmed me

Never  Rarely  Sometimes  Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

4B. My worries overwhelmed me

Never  Rarely  Sometimes  Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

5A. I felt tense

Never  Rarely  Sometimes  Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

5B. I felt tense

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

6A. I had difficulty calming down

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

6B. I had difficulty calming down

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

7A. I had sudden feelings of panic

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

7B. I had sudden feelings of panic

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

8A. I felt nervous when my normal routine was disturbed

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

8B. I felt nervous when my normal routine was disturbed

Never  Rarely  Sometimes Usually  Always

## **SOCIAL ISOLATION**

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

1A. I felt left out

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

1B. I felt left out

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

2A. I felt that people barely knew me

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

2B. I felt that people barely knew me

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

3A. I felt isolated from others

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

3B. I felt isolated from others

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

4A. I felt that people were around me but not with me

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

4B. I felt that people were around me but not with me

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

5A. I felt isolated even when I was not alone

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

5B. I felt isolated even when I was not alone

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

6A. I felt that people avoided talking to me

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

6B. I felt that people avoided talking to me

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

7A. I felt detached from other people

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

7B. I felt detached from other people

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

8A. I felt like a stranger to those around me

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

8B. I felt like a stranger to those around me

Never  Rarely  Sometimes Usually  Always

## EMOTIONAL SUPPORT

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

1A. I had people who I could talk to about my health

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

1B. I had people who I could talk to about my health

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

2A. I had someone who could listen to me when I needed to talk

Never  Rarely  Sometimes Usually  Always



During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

2B. I had someone who could listen to me when I needed to talk

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

3A. I had someone to confide in or talk to about myself or my problems

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

3B. I had someone to confide in or talk to about myself or my problems

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

4A. I had someone with whom to share my most private worries and fears

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

4B. I had someone with whom to share my most private worries and fears

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

5A. I had someone who understood my problems

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

5B. I had someone who understood my problems

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

6A. I felt close to my friends

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

6B. I felt close to my friends

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

7A. I got emotional support from my family

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

7B. I got emotional support from my family

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

8A. I got emotional support from my colleagues

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

8B. I got emotional support from my colleagues

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

9A. I had someone who made me feel needed

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

9B. I had someone who made me feel needed

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

10A. I had someone who made me feel appreciated

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

10B. I had someone who made me feel appreciated

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

11A. I had someone I trusted to talk with about my feelings

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

11B. I had someone I trusted to talk with about my feelings

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

12A. I had people who cared about what happens to me

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

12B. I had people who cared about what happens to me

Never  Rarely  Sometimes Usually  Always

Prior to the pandemic (i.e., before March 15<sup>th</sup>),

13A. I got love and affection

Never  Rarely  Sometimes Usually  Always

During the pandemic (March 15<sup>th</sup> – April 30<sup>th</sup>),

13B. I got love and affection

Never  Rarely  Sometimes Usually  Always

Thank you for completing the survey

## REFERENCES

1. Lai J, Ma S, Wang Y, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw Open*. 2020;3(3):e203976. doi:10.1001/jamanetworkopen.2020.3976 [PubMed: 32202646]
2. Shen X, Zou X, Zhong X, Yan J, Li L. Psychological stress of ICU nurses in the time of COVID-19. *Crit Care*. 2020;24(1). doi:10.1186/s13054-020-02926-2
3. Shechter A, Diaz F, Moise N, et al. Psychological distress, coping behaviors, and preferences for support among New York healthcare workers during the COVID-19 pandemic. *Gen Hosp Psychiatry*. 2020;66:1–8. doi:10.1016/j.genhosppsych.2020.06.007 [PubMed: 32590254]
4. Lu W, Wang H, Lin Y, Li L. Psychological status of medical workforce during the COVID-19 pandemic: A cross-sectional study. *Psychiatry Res*. 2020;288. doi:10.1016/j.psychres.2020.112936
5. Chen Q, Liang M, Li Y, et al. Mental health care for medical staff in China during the COVID-19 outbreak. *The Lancet Psychiatry*. 2020;7(4):e15–e16. doi:10.1016/S2215-0366(20)30078-X [PubMed: 32085839]

6. Liu Q, Luo D, Haase JE, et al. The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study. *Lancet Glob Heal*. 2020;8(6):e790–e798. doi:10.1016/S2214-109X(20)30204-7
7. Barello S, Palamenghi L, Graffigna G. Burnout and somatic symptoms among frontline healthcare professionals at the peak of the Italian COVID-19 pandemic. *Psychiatry Res*. 2020;290. doi:10.1016/j.psychres.2020.113129
8. Matsuo T, Kobayashi D, Taki F, et al. Prevalence of Health Care Worker Burnout During the Coronavirus Disease 2019 (COVID-19) Pandemic in Japan. *JAMA Netw open*. 2020;3(8):e2017271. doi:10.1001/jamanetworkopen.2020.17271 [PubMed: 32749466]
9. El-Hage W, Hingray C, Lemogne C, et al. Health professionals facing the coronavirus disease 2019 (COVID-19) pandemic: What are the mental health risks? *Encephale*. 2020;46(3):S73–S80. doi:10.1016/j.encep.2020.04.008 [PubMed: 32370984]
10. AAPA. COVID-19 and the PA Workforce: Trends and Implications for PAs.; 2020. <https://www.aapa.org/download/65014>.
11. Dugani SB, Geyer HL, Maniaci MJ, Burton MC. Perception of barriers to research among internal medicine physician hospitalists by career stage. *Hosp Pract*. 2020:1–7. doi:10.1080/21548331.2020.1779537
12. Dugani SB, Geyer HL, Maniaci MJ, Schenzel HA, Burton MC. Perspectives on and barriers to research among advanced practice provider and physician hospitalists. *Nurse Pract*. 2020;45(9):41–47. doi:10.1097/01.NPR.0000694720.63033.a5
13. Dugani SB, Geyer HL, Maniaci MJ, Fischer K, Croghan I, Burton C. Psychological wellness of internal medicine hospitalists during the COVID-19 pandemic. *Hosp Pract*. October 2020. doi:10.1080/21548331.2020.1832792
14. HEXAGON. HEXAGON. <https://www.mayo.edu/research/centers-programs/hospital-experiences-advance-goals-outcomes-network/about>. Published 2020. Accessed November 1, 2020.
15. HealthMeasures. <https://www.healthmeasures.net/explore-measurement-systems/promis>.
16. Hays RD, Schalet BD, Spritzer KL, Cella D. Two-item promis® global physical and mental health scales. *J Patient-Reported Outcomes*. 2017;1(1). doi:10.1186/s41687-017-0003-8
17. Pilkonis PA, Yu L, Dodds NE, Johnston KL, Maihoefer CC, Lawrence SM. Validation of the depression item bank from the Patient-Reported Outcomes Measurement Information System (PROMIS®) in a three-month observational study. *J Psychiatr Res*. 2014;56(1):112–119. doi:10.1016/j.jpsychires.2014.05.010 [PubMed: 24931848]
18. Pilkonis PA, Choi SW, Reise SP, Stover AM, Riley WT, Cella D. Item banks for measuring emotional distress from the patient-reported outcomes measurement information system (PROMIS®): Depression, anxiety, and anger. *Assessment*. 2011;18(3):263–283. doi:10.1177/1073191111411667 [PubMed: 21697139]
19. PROMIS. Anxiety. [https://www.healthmeasures.net/images/PROMIS/manuals/PROMIS\\_Anxiety\\_Scoring\\_Manual.pdf](https://www.healthmeasures.net/images/PROMIS/manuals/PROMIS_Anxiety_Scoring_Manual.pdf). Published 2019.
20. PROMIS. Social Isolation. [http://www.healthmeasures.net/administrator/components/com\\_instruments/uploads/15-09-01\\_16-44-48\\_PROMISSocialIsolationScoringManual.pdf](http://www.healthmeasures.net/administrator/components/com_instruments/uploads/15-09-01_16-44-48_PROMISSocialIsolationScoringManual.pdf). Published 2015.
21. Hahn EA, DeWalt DA, Bode RK, et al. New English and Spanish social health measures will facilitate evaluating health determinants. *Health Psychol*. 2014;33(5):490–499. doi:10.1037/hea0000055 [PubMed: 24447188]
22. PROMIS. Emotional Support. [http://www.healthmeasures.net/images/promis/manuals/PROMIS\\_Emoional\\_Support\\_Scoring\\_Manual.pdf](http://www.healthmeasures.net/images/promis/manuals/PROMIS_Emoional_Support_Scoring_Manual.pdf). Published 2020.
23. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. *J Biomed Inform*. 2019;95:103208. doi:10.1016/j.jbi.2019.103208 [PubMed: 31078660]
24. Harris PA, Taylor R, Thielke R, Payne J, Gonzalez N, Conde JG. Research electronic data capture (REDCap)—a metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009;42(2):377–381. doi:10.1016/j.jbi.2008.08.010 [PubMed: 18929686]

25. AANP. Nurse Practitioner COVID-19 Survey, EXECUTIVE SUMMARY.; 2020. <https://storage.aanp.org/www/documents/AANP-COVID19-Survey-Executive-Summary-2.pdf>.
26. The Physicians Foundation. America's Physicians. COVID-19 Impact Edition; 2020. <https://physiciansfoundation.org/wp-content/uploads/2020/08/20-1278-Merritt-Hawkins-2020-Physicians-Foundation-Survey.6.pdf>.
27. Chu E, Lee KM, Stotts R, et al. Hospital-based health care worker perceptions of personal risk related to COVID-19. *J Am Board Fam Med*. 2021;34(Suppl):S103–S112. doi:10.3122/JABFM.2021.S1.200343 [PubMed: 33622825]
28. Moore KS, Hemmer CR, Taylor JM, Malcom AR. Nursing Professionals' Stress Level During Coronavirus Disease 2019: A Looming Workforce Issue. *J Nurse Pract*. 2021. doi:10.1016/j.nurpra.2021.02.024
29. Hølge-Hazelton B, Kjerholt M, Rosted E, Thestrup Hansen S, Zacho Borre L, McCormack B. Health Professional Frontline Leaders' Experiences During the COVID-19 Pandemic: A Cross-Sectional Study. *J Healthc Leadersh*. 2021;13:7–18. doi:10.2147/JHL.S287243 [PubMed: 33505179]
30. Dinibutun SR. Factors associated with burnout among physicians: An evaluation during a period of COVID-19 pandemic. *J Healthc Leadersh*. 2020;12:85–94. doi:10.2147/JHL.S270440 [PubMed: 32982532]
31. Preti E, Di Mattei V, Perego G, et al. The Psychological Impact of Epidemic and Pandemic Outbreaks on Healthcare Workers: Rapid Review of the Evidence. *Curr Psychiatry Rep*. 2020;22(8). doi:10.1007/s11920-020-01166-z
32. Hall H The effect of the COVID-19 pandemic on healthcare workers' mental health. *J Am Acad Physician Assist*. 2020;33(7):45–48. doi:10.1097/01.JAA.0000669772.78848.8c
33. Giorgi G, Lecca LI, Alessio F, et al. COVID-19-related mental health effects in the workplace: A narrative review. *Int J Environ Res Public Health*. 2020;17(21):1–22. doi:10.3390/ijerph17217857
34. Marco CA, Larkin GL, Feeser VR, Monti JE, Vearrier L. Post-traumatic stress and stress disorders during the COVID-19 pandemic: Survey of emergency physicians. *J Am Coll Emerg Physicians Open*. 2020;1(6):1594–1601. doi:10.1002/emp2.12305 [PubMed: 33392568]
35. Raudenská J, Steinerová V, Javřková A, et al. Occupational burnout syndrome and post-traumatic stress among healthcare professionals during the novel coronavirus disease 2019 (COVID-19) pandemic. *Best Pract Res Clin Anaesthesiol*. 2020;34(3):553–560. doi:10.1016/j.bpa.2020.07.008 [PubMed: 33004166]
36. Khan N, Palepu A, Dodek P, et al. Cross-sectional survey on physician burnout during the COVID-19 pandemic in Vancouver, Canada: the role of gender, ethnicity and sexual orientation. *BMJ Open*. 2021;11(5):e050380. doi:10.1136/bmjopen-2021-050380
37. AANP. American Association of Nurse Practitioners. <https://www.aanp.org/practice/professional-development>. Published 2019.
38. AAPA. American Association of Physician Assistants. <https://www.aapa.org/>. Published 2019.
39. Pollock A, Campbell P, Cheyne J, et al. Interventions to support the resilience and mental health of frontline health and social care professionals during and after a disease outbreak, epidemic or pandemic: a mixed methods systematic review. *Cochrane Database Syst Rev*. 2020;2020(11). doi:10.1002/14651858.CD013779

**Table 1:**

Characteristics of responding hospitalists, categorized by profession

Characteristics	APPs (n = 70) no. (%)	Physicians (n = 84) no. (%)	P value
Age <40 years	48 (69)	39 (46)	0.004*
Gender			<0.001*
Women	53 (78)	32 (38)	
Men	15 (22)	51 (61)	
Prefer not to respond	0 (0)	1 (1)	
Worked 4 weeks during pandemic	46 (66)	35 (42)	0.003*
During pandemic, provided care to patients with known or suspected COVID-19	59 (84)	70 (84)	0.99*
Concerned about contracting COVID-19 infection at work			0.79*
Agree (strongly agree or agree)	53 (76)	62 (74)	
Other (neutral, disagree, or strongly disagree)	17 (24)	22 (26)	
Primary source of information on COVID-19			
News websites	11 (16)	18 (21)	
Social medial platforms	0 (0)	2 (2)	
Institutional resources	56 (80)	56 (67)	
Discussion with family and friends	1 (1)	0 (0)	
Other	2 (3)	8 (10)	
Number of people living at home prior to pandemic			0.76 <sup>†</sup>
Lived alone	7 (10)	9 (11)	
1-4	57 (83)	66 (79)	
5-10	5 (7)	9 (11)	
Number of people living at home during pandemic			0.80 <sup>†</sup>
Lived alone	8 (12)	9 (11)	
1-4	56 (81)	65 (78)	
5-10	5 (7)	9 (11)	
People living at home during pandemic			
Children	37 (53)	55 (66)	0.11*
Parents	8 (11)	8 (10)	0.70*
Spouse/partner/significant other	53 (76)	69 (82)	0.33*
Changed where you lived due to fear of transmitting COVID-19 to family members	1 (1)	7 (8)	0.07 <sup>†</sup>
Global well-being (mental health)			
Prior to pandemic (excellent or very good)	60 (86)	78 (93)	0.15*
During pandemic (excellent or very good)	26 (37)	55 (66)	0.001*
Global well-being (social activities and relationships)			

Characteristics	APPs (n = 70) no. (%)	Physicians (n = 84) no. (%)	P value
Prior to pandemic (excellent or very good)	61 (87)	74 (88)	0.86*
During pandemic (excellent or very good)	7 (10)	30 (36)	<0.001*

APPs: advanced practice providers (nurse practitioners and physician assistants)

Time periods: prior to pandemic (before March 15, 2020); during pandemic (March 15–April 30, 2020).

Global well-being options were excellent, very good, good, fair, and poor (see Supplementary Table 1.

Data not reported for 1 participant (age category; number of people living at home prior to pandemic and during pandemic; provided care to patient with known or suspected COVID-19; global well-being mental health) and 2 participants (gender).

Percentages may not add to 100 due to rounding; for 'People living at home during pandemic', respondents could select more than one option.

\* Chi-square test;

† Fisher exact test

**Table 2:**

Scores for each domain, categorized by profession

	<b>APPs (Mean ± SD)</b>	<b>Physicians (Mean ± SD)</b>	<b>P value *</b>
<b>Anxiety</b>			
Prior to pandemic	14.6 ± 4.2	13.9 ± 4.2	
During pandemic	20.5 ± 6.2	17.9 ± 5.8	
Change in anxiety	-5.9 ± 4.9	-4.1 ± 4.1	0.01
<b>Social Isolation</b>			
Prior to pandemic	12.9 ± 4.4	12.2 ± 4.7	
During pandemic	18.0 ± 6.6	15.1 ± 6.6	
Change in social isolation	-5.1 ± 5.1	-2.9 ± 1.9	0.004
<b>Emotional Support</b>			
Prior to pandemic	56.9 ± 7.7	57.7 ± 7.1	
During pandemic	54.8 ± 8.5	56.8 ± 8.3	
Change in emotional support	2.1 ± 4.8	1.0 ± 3.0	0.09

APPs: advanced practice providers; SD: standard deviation

Time periods: prior to pandemic (before March 15, 2020); during pandemic (March 15–April 30, 2020).

Change in scores calculated as 'prior to pandemic' score minus 'during pandemic' score. For anxiety and social isolation, positive value for change indicates improvement; for emotional support, negative value for change indicates improvement.

\* Student's t-test comparing the average change between APPs and physicians.



**Table 3:** Multiple linear regression models for change in score for anxiety, social isolation, and emotional support<sup>a</sup>

	Change in Anxiety (positive value indicates improvement)		Change in Social isolation (positive value indicates improvement)		Change in Emotional support (negative value indicates improvement)	
	Estimate (95% CI)	P value	Estimate (95% CI)	P value	Estimate (95% CI)	P value
Intercept	-6.55		-7.40		5.33	
Age, years		0.11		0.94		0.10
<40	referent group		referent group		referent group	
40	1.20 (-0.29, 2.68)		-0.06 (-1.71, 1.59)		-1.12 (-2.45, 0.21)	
Gender		0.04		0.43		0.35
Women	referent group		referent group		referent group	
Men/other	1.60 (0.06, 3.14)		0.68 (-1.03, 2.39)		-0.69 (-2.02, 0.72)	
Profession		0.50		0.08		0.32
APP	referent group		referent group		referent group	
Physician	0.57 (-1.10, 2.25)		1.65 (-0.21, 3.51)		-0.76 (-2.26, 0.74)	
Weeks worked during pandemic		0.23		0.27		0.59
4	referent group		referent group		referent group	
<4	0.93 (-0.58, 2.44)		0.95 (-0.74, 2.63)		-0.37 (-1.72, 0.98)	
Concerned about contracting COVID-19 at work		<0.001		0.68		0.56
Strongly agree or agree	referent group		referent group		referent group	
Other <sup>b</sup>	3.02 (1.39, 4.65)		0.38 (-1.43, 2.20)		-0.43 (-1.89, 1.03)	
Living situation prior to pandemic		0.33		0.11		0.01
Lived alone	referent group		referent group		referent group	
Lived with 1-4 members	-1.39 (-3.77, 0.99)		1.85 (-0.80, 4.49)		-3.00 (-5.13, -0.88)	
Lived with 5-10 members	-2.48 (-5.78, 0.83)		3.92 (0.25, 7.60)		-4.45 (-7.40, -1.50)	
Survey site		0.33		0.96		0.61
A	referent group		referent group		referent group	
B	1.22 (-0.91, 3.26)		-0.08 (2.34, 2.19)		0.54 (-1.28, 2.36)	
C	1.21 (-1.19, 3.62)		-0.57 (-3.25, 2.10)		0.75 (-1.39, 2.90)	

	Change in Anxiety (positive value indicates improvement)		Change in Social isolation (positive value indicates improvement)		Change in Emotional support (negative value indicates improvement)	
	Estimate (95% CI)	P value	Estimate (95% CI)	P value	Estimate (95% CI)	P value
D	-0.55 (-2.46, 1.37)		0.18 (-1.95, 2.31)		1.14 (-0.57, 2.85)	

APP: advanced practice provider; CI: confidence interval

<sup>a</sup>Separate linear regression models were used for anxiety, social isolation, and emotional support. Each model included the following covariates: age, gender, profession, weeks worked during pandemic, concern about contracting COVID-19 at work, living situation prior to pandemic, and survey site. Outcomes were the change in score, defined as 'prior to pandemic' score minus 'during pandemic' score. The referent group's estimate = 0. Positive values for change in anxiety and social isolation indicate improvement, and negative values for change in emotional support indicate improvement.

<sup>b</sup>Other refers to neutral, disagree or strongly disagree.

Time periods: prior to pandemic (before March 15, 2020); during pandemic (March 15–April 30, 2020).

**Table 4:**

Multivariable logistic regression models for global well-being during the pandemic<sup>a</sup>

	Global well-being: mental health		Global well-being: social activities and relationships	
	Top category (95% CI)	P value	Odds ratio (95% CI)	P value
Age, years		0.21		0.02
<40	referent group		referent group	
40	1.69 (0.75, 3.82)		2.77 (1.15, 6.65)	
Gender		0.09		0.64
Women	referent group		referent group	
Men/other	2.08 (0.90, 4.84)		1.25 (0.50, 3.13)	
Profession		0.03		0.01
APP	referent group		referent group	
Physician	2.82 (1.12, 7.13)		4.08 (1.38, 12.08)	
Weeks worked during pandemic		0.81		0.47
4	referent group		referent group	
<4	0.90 (0.39, 2.07)		0.72 (0.30, 1.75)	
Concerned about contracting COVID-19 at work		0.06		0.71
Strongly agree or agree	referent group		referent group	
Other <sup>b</sup>	2.53 (0.96, 6.62)		1.19 (0.47, 3.02)	
Living situation prior to pandemic		0.42		0.74
Lived alone	referent group		referent group	
Lived with 1–4 members	1.82 (0.48, 6.97)		1.37 (0.30, 6.20)	
Lived with 5–10 members	0.90 (0.15, 5.46)		2.15 (0.29, 15.77)	
Survey site		0.07		0.79
A	referent group		referent group	
B	0.51 (0.16, 1.60)		0.71 (0.21, 2.33)	
C	0.47 (0.13, 1.72)		1.53 (0.36, 6.46)	
D	0.23 (0.08, 0.68)		0.86 (0.28, 2.65)	

	Global well-being: mental health	Global well-being: social activities and relationships
	Top category (excellent or very good)	Top category (good, fair, or poor)
	Odds ratio (95% CI)	Odds ratio (95% CI)
	0.26	0.17
	<i>P</i> value	<i>P</i> value
Cox-Snell R <sup>2</sup>		

APP: advanced practice provider; CI: confidence interval

<sup>a</sup>Separate logistic regression models were used for the 2, single-item measures of 'global well-being: mental health' and 'global well-being: social activities and relationships'. Each model included the following covariates: age, gender, profession, weeks worked during pandemic, concern about contracting COVID-19 at work, living situation prior to pandemic, and survey site.

<sup>b</sup>Other refers to neutral, disagree or strongly disagree.

$\beta$  coefficient can be determined from natural logarithm (odds ratio estimate). For instance, for mental health, age 40 years,  $\beta$  coefficient = natural logarithm (1.69) = 0.525.

Time period: during pandemic (March 15–April 30, 2020).