





Worsening general health and psychosocial wellbeing of Australian hospital allied health practitioners during the COVID-19 pandemic

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ABSTRACT

Objective. To describe self-reported general and psychological health for allied health practitioners at an Australian acute public health service over three time points within the coronavirus disease 2019 (COVID-19) pandemic. **Methods.** This study collected data from cross-sectional online surveys at three time points: May–June 2020 (T_1), October–November 2020 (T_2) and November–December 2021 (T_3). The self-report questionnaire consisted of demographic questions, a general health question and the 21-item version of the Depression Anxiety Stress Scales (DASS-21). **Results.** A total of 308 responses were received (T_1 $n = 135$, T_2 $n = 78$, T_3 $n = 95$) from representatives of eight allied health professions. The proportion of allied health practitioners reporting poor general health significantly increased over time, as did mean scores on all DASS-21 sub-scales. General health status was also significantly associated with DASS-21 subscale scores. Anxiety scores increased significantly between T_1 and T_2 , while depression scores increased significantly between T_2 and T_3 . Significant increases in stress scores were recorded across all time intervals. Between T_1 and T_3 , the proportion of allied health practitioners reporting moderate, severe, or extremely severe symptoms increased for depression (10.3–30.9%), anxiety (5.2–18.2%) and stress (13.3–36.3%). **Conclusion.** The general and psychological health of allied health practitioners appears to be worsening as the COVID-19 pandemic continues. Organisational strategies to support the health of the allied health workforce in acute care settings must address the cumulative effects of prolonged pressure on their general and psychosocial health. Support strategies need to be responsive to changes in psychological wellbeing at different phases of the pandemic.

Keywords: allied health, anxiety, COVID-19, depression, healthcare workers, mental health, stress, wellbeing.

Introduction

The negative health and wellbeing impacts of the coronavirus disease 2019 (COVID-19) pandemic on healthcare workers are well documented,^{1–3} and may compromise their ability to provide quality care. International research has consistently identified significant rates of post-traumatic stress disorder, anxiety, depression and stress in this workforce during the pandemic.⁴ Frontline clinical experience, longer working hours, clinical inexperience and female gender are associated with poorer healthcare workers outcomes internationally.^{1,5} However, most available research uses cross-sectional methods^{4,6} measuring health and wellbeing at discrete points during the pandemic.

Most available evidence focuses on nurses and doctors, with allied health practitioners (AHPs) and other workforce sectors underrepresented.⁴ AHPs comprise the second

largest workforce in the Australian healthcare system, and commonly work in frontline roles as members of their respective professions (physiotherapy, occupational therapy, social work, dietetics, speech pathology, podiatry and others).⁷ Like other healthcare workers, AHPs have faced considerable challenges within and outside work during the COVID-19 pandemic including managing remote learning, community lockdowns, staffing reductions, redeployment, concerns regarding personal protective equipment, and occupational exposure to both the virus and situations which elicited moral distress.^{1,2,5} However, distinct aspects of the AHP practice context may result in differing experiences and impacts on health and wellbeing. Multidisciplinary and autonomous working is the norm for AHPs, which increases the inherent complexity of their practice.⁸ They are also frequently employed in settings subjected to COVID-19 surge limitations or shutdowns (such as rehabilitation services), which increases their exposure to disruptive stand downs or redeployment.⁹

It is therefore important to understand the impact of the COVID-19 pandemic on the general health and psychosocial wellbeing of AHPs, to enable appropriate supports that enable this workforce to continue providing high quality care. As the pandemic continues, continuing studies that monitor health and wellbeing through surges of infection are also needed to track changes over time.

Study aim

This study aimed to describe self-reported general health and psychological wellbeing of AHPs employed at an Australian acute public health service over time during the COVID-19 pandemic, and to explore any relationships between health, wellbeing, and sociodemographic characteristics.

Methods

This study conducted brief, anonymous cross-sectional online surveys with an AHP workforce at three timepoints: May–June 2020 (T_1), October–November 2020 (T_2) and November–December 2021 (T_3). Ethics approval was granted by the healthcare service low risk ethics panel (HREC/20/WH/62913), and no incentives were offered to respondents. The analysis presented here is part of a larger study including nurses, midwives, doctors and AHPs, whose overall results are reported elsewhere.^{2,10,11}

Study context

The AHP workforce sampled in this study are employed at a tertiary health service in the western suburbs of Melbourne, Australia. The service provides emergency, acute and sub-acute health services to the local community. Approximately 400 AHPs are employed at the service, including Aboriginal health workers, allied health assistants, audiologists,

interpreters, dietitians, occupational therapists, pastoral care workers, physiotherapists, podiatrists, psychologists, social workers, and speech pathologists.

The health service catchment area consistently experienced higher than average rates of COVID-19 infection,¹² and was located in a city which endured six community lockdowns in 2020 and 2021 (250 days overall). The pandemic impacted Melbourne in a series of waves. At T_1 , the city was emerging from the first wave of infections. Stage 3 ('Stay at home') restrictions were implemented, with 1543 COVID-19 cases and 18 deaths in Victoria recorded.¹³ At T_2 , Melbourne was emerging from a prolonged winter lockdown after recording 31 consecutive days without new infections. There had been 20 345 cases and 820 deaths in Victoria, with most mortality linked to aged care outbreaks.¹⁴ At T_3 , the Omicron variant wave had commenced, and Melbourne was experiencing rapidly increasing case numbers and hospitalisations. As at 31 December 2021, there was a cumulative total of 176 534 and 1525 deaths in Victoria since the pandemic began.¹⁵

Procedure

AHPs were invited by email at each timepoint to participate in the study. The invitation included a plain language statement and survey link. Completion of the survey was taken as implied consent. The survey was available for 5–6 weeks each time, and did not include randomisation, adaptive questioning, or completeness checks. The self-report survey included sociodemographic questions, a general health question and the Depression Anxiety Stress Scale (DASS-21).¹⁶ Most questions were fixed response, and responses could be reviewed using a back button. Sociodemographic characteristics included gender, age, country of birth, allied health discipline, school-aged children (yes/no), employment status (full-time/part-time/casual), and years of clinical and healthcare service experience. A single question measures general health ('In general, how would you rate your health?') using a five-point Likert scale (1 = poor to 5 = excellent). The DASS-21 assesses symptoms of anxiety, depression and stress in the past week.¹⁷ In this study, Cronbach's α was 0.898, 0.761 and 0.880 for the Depression, Anxiety and Stress sub-scales respectively demonstrating good internal consistency.

Data management and analysis

All data were analysed with IBM SPSS Statistics version 27 (IBM Corp., Armonk, NY, USA). General health responses were reclassified into the three categories – 'poor (1–2)', 'good (3)' and 'excellent (4–5)'. Surveys with incomplete DASS-21 responses were excluded from analysis. A descriptive analytic strategy was adopted, framed by a preliminary analysis that confirmed the data was non-normal. Responses were summarised by frequency, percentage, mean and standard deviation, and DASS-21 scores were compared to published clinical cut-off scores.¹⁶

Clinical cut-off points for the DASS-21 classify subscale scores into five categories – normal, mild, moderate, severe, extremely severe. Higher DASS-21 scores are associated with lower overall psycho-social wellbeing and aspects of workplace resilience for healthcare workers.¹⁸ Respondents scoring moderate or worse symptoms are in the 86th (depression), 89% (anxiety) and 86th (stress) percentile respectively in comparison to population norms,¹⁹ and in this study were assumed to experience greater negative impacts from their symptoms. The five categories were therefore reduced to two – mild or better (scores: depression ≤ 6 , anxiety ≤ 5 , stress ≤ 9) and moderate or worse (scores: depression ≥ 7 , anxiety ≥ 6 , stress ≥ 10).

Sample size estimation was based on the DASS; a sample size of 105 was required at each timepoint ($d = 0.5$, $\alpha = 0.05$, 95% power)¹⁰ to enable adequately powered analysis between the three samples. Chi-squared tests explored differences between demographic groups (i.e. gender, employment status etc.). Mann–Whitney *U*-tests explored differences between independent groups (i.e. T_1 and T_2 only) and Kruskal–Wallis tests were applied to multiple independent groups (i.e. categories of self-rated general health).

Ethics approval

Ethics approval was granted by the healthcare service low risk ethics panel (HREC/20/WH/62913). The study was undertaken with the appropriate informed consent of participants or guardians.

Results

In total, 308 completed surveys were received over all timepoints (T_1 $n = 135$, T_2 $n = 78$, T_3 $n = 95$). However, only 60% ($n = 186$) of respondents completed multiple surveys and only 2% ($n = 5$) responded to all three. Therefore, the samples were treated as independent. Each sample was similar in terms of age, clinical experience or years employed at the healthcare service (Table 1). Most respondents identified as women, were born in Australia and did not live with school-aged children. Respondents reported a range of employment status and practice areas, with a small proportion occupying leadership roles.

General health status

Most respondents reported excellent general health at each timepoint (Fig. 1). However, there was a small increase in the proportion reporting poor health between the last two timepoints (T_1 1%, T_2 1%, T_3 7%).

Psychosocial health

Mean DASS-21 sub-scale scores from each timepoint are displayed in Table 2. There was a significant association between general health and DASS-21 sub-scale scores for

depression ($H(3) = 25.8$, $P = <0.001$), anxiety ($H(3) = 13.90$, $P = <0.001$) and stress ($H(3) = 11.76$, $P = 0.003$), with lower DASS-21 scores associated with better health.

Mean sub-scale scores increased (i.e. worsened) over time, although not all increases were statistically significant. Anxiety scores increased significantly between T_1 and T_2 ($U = 3522.00$, $P = 0.001$) with a non-significant increase between T_2 and T_3 . Conversely, depression scores trended higher between T_1 and T_2 , and then increased significantly between T_2 and T_3 ($U = 2458.00$, $P = 0.027$). Stress scores rose significantly between both T_1 – T_2 ($U = 3875.00$, $P = 0.016$) and T_2 – T_3 ($U = 2559.00$, $P = 0.026$).

DASS-21 categories (Table 2) also indicated more respondents reporting significant depression, anxiety, and stress as the pandemic continued. The proportion of AHPs reporting moderate or worse depression increased from 10.3% ($n = 14$) (T_1) to 14.5% ($n = 9$) (T_2) to 30.9% ($n = 29$) (T_3). Respondents reporting moderate or worse anxiety increased less rapidly than depression from 5.2% ($n = 7$) (T_1) to 13.6% ($n = 10$) (T_2) to 18.2% ($n = 15$) (T_3). However, moderate or worse stress was most prevalent at all timepoints, increasing from 13.3% ($n = 17$) (T_1) to 23.0% ($n = 17$) (T_2) to 36.3% ($n = 32$) (T_3).

Gender, living with school-aged children or management roles were not significantly associated with any DASS-21 sub-scale or clinical category at any timepoint. At T_1 , full-time AHPs reported significantly higher depression ($U = 1612$, $P = 0.035$), anxiety ($U = 1346$, $P = 0.002$) and stress ($U = 1323$, $P < 0.001$) scores. At T_2 , full-time AHPs continued to report significantly higher depression scores ($U = 438.50$, $P = 0.041$) than those employed part-time, but employment status was no longer associated with sub-scale scores by T_3 . The only other significant relationship identified occurred at T_2 , when AHPs practising in acute settings reported more severe stress symptoms than colleagues working in other settings (χ^2 13.724, d.f. = 6, $P = 0.033$).

Discussion

This is the first Australian study to investigate the general health and psychosocial wellbeing of AHPs at multiple timepoints during the COVID-19 pandemic. The proportion of AHPs experiencing moderate to worse depression, anxiety and stress are consistent with previous studies of healthcare workers during the severe acute respiratory syndrome (SARS) outbreak and the current pandemic.^{2,3,20} However, the prevalence of moderate or worse symptoms reported here is greater at all timepoints than reported in other international pandemic studies. Studies from Italy²¹ and Singapore²² estimated the prevalence of moderate or worse symptoms across all sub-scales as under 10% in the early months of the pandemic. However, an Australian study of nurses²³ reported higher levels of moderate or worse depression (21.6%), anxiety (28.6%) and stress (28.0%) in April

Table 1. Sample characteristics.

| Variable | | <i>T</i> ₁ mean ± s.d. min–max <i>n</i> = 135 | <i>T</i> ₂ mean ± s.d. min–max <i>n</i> = 78 | <i>T</i> ₃ mean ± s.d. min–max <i>n</i> = 95 |
|--|-------------------------|--|---|---|
| Age | | 35.9 ± 9.7 22–64 | 36.7 ± 9.5 24–65 | 37.4 ± 10.1 22–66 |
| Years' experience as an AHP | | 10.7 ± 8.9 1–40 | 11.7 ± 8.4 1–41 | 11.7 ± 9.3 0–37 |
| Years employed at study health service | | 5.6 ± 4.8 0–25 | 6.8 ± 6.6 0–30 | 6.3 ± 5.9 0–26 |
| Variable | Category/option | <i>T</i> ₁ <i>n</i> (%) | <i>T</i> ₂ <i>n</i> (%) | <i>T</i> ₃ <i>n</i> (%) |
| Gender | Woman | 121 (89.6) | 68 (87.2) | 82 (86.3) |
| | Man | 12 (8.9) | 10 (12.8) | 13 (13.7) |
| | Not disclosed | 2 (1.5) | 0 (0.0) | 0 (0.0) |
| Country of birth | Australia | 113 (81.3) | 67 (83.8) | 80 (80.0) |
| | Overseas | 22 (15.8) | 11 (13.8) | 13 (13.0) |
| | Not disclosed | 4 (2.9) | 2 (2.4) | 0 (0.0) |
| School-aged children | Living with | 33 (24.4) | 20 (25.6) | 28 (29.8) |
| | Not living with | 102 (75.6) | 58 (74.4) | 66 (70.2) |
| Employment status | Full-time | 85 (63.4) | 40 (51.9) | 48 (51.6) |
| | Part-time | 49 (36.6) | 37 (48.1) | 45 (48.4) |
| Allied health discipline | Dietetics | 6 (4.4) | 6 (7.7) | 2 (2.1) |
| | Podiatry | 2 (1.5) | 2 (2.6) | 2 (2.1) |
| | Speech pathology | 7 (5.2) | 2 (2.6) | 7 (7.4) |
| | Occupational therapy | 24 (17.8) | 18 (23.1) | 15 (16.0) |
| | Social work | 26 (19.3) | 5 (6.4) | 10 (10.6) |
| | Psychology | 10 (7.4) | 4 (5.1) | 8 (8.5) |
| | Physiotherapy | 47 (34.8) | 30 (38.5) | 31 (33.0) |
| | Allied health assistant | 5 (3.7) | 6 (7.7) | 9 (9.6) |
| | Other | 8 (5.9) | 5 (6.4) | 10 (10.6) |
| Management role | Yes | 11 (8.2) | 10 (13.0) | 20 (10.6) |
| | No | 123 (91.8) | 67 (87.0) | 84 (89.4) |
| Area of work | Acute | 63 (47.7) | 32 (42.1) | 39 (41.9) |
| | Sub-acute | 38 (28.8) | 22 (28.9) | 22 (23.7) |
| | Community | 31 (23.5) | 22 (28.9) | 32 (34.4) |

Note: Participants identifying their positions as 'other' positions were employed in administration, pastoral care, pharmacy, community based and research roles.

2020. An Australian study of mental health professionals completed in January 2021²⁴ observed higher rates for moderate or worse depression (52.1%) and anxiety (63.1%), but lower levels of stress (20.2%). These findings suggest the prevalence of depression, anxiety and stress symptoms are significantly influenced by cultural, service and/or geographical contexts, supporting the use of qualitative or mixed methods studies to further explore these effects.

This study also provides a more nuanced picture of general health and psychosocial wellbeing for AHPs in the temporal context of the pandemic. DASS-21 sub-scale scores changed at different rates, with anxiety increasing more sharply initially and depression becoming more problematic at later timepoints. Higher DASS-21 scores were related to an increased risk of burnout and compassion fatigue for other hospital-based healthcare workers recently,²⁵ suggesting that

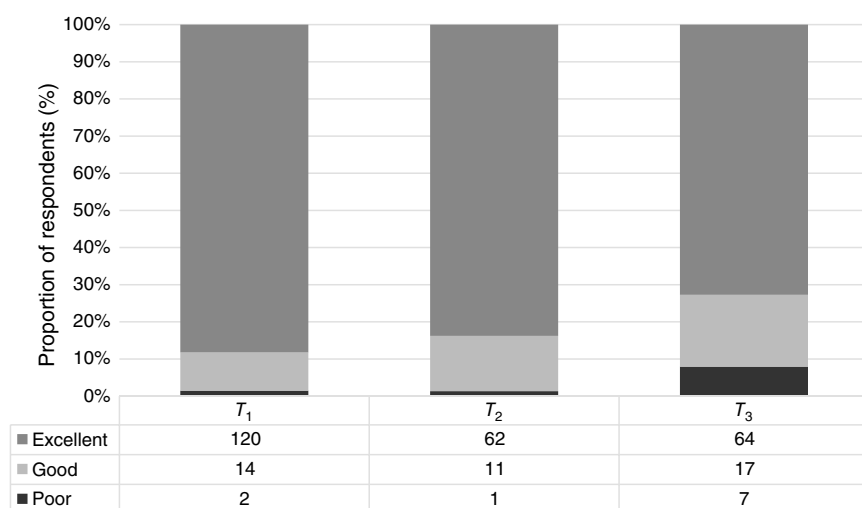


Fig. 1. Self-reported general health.

Table 2. Mean DASS-21 sub-scale scores by time point.

| DASS sub-scales | | T ₁ mean ± s.d. | T ₂ mean ± s.d. | T ₃ mean ± s.d. |
|-----------------|---------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Depression | | 3.06 ± 3.21 | 3.49 ± 3.60 | 5.44 ± 5.07 |
| Anxiety | | 1.56 ± 2.05 | 2.70 ± 2.75 | 2.87 ± 3.45 |
| Stress | | 4.94 ± 3.65 | 6.22 ± 3.88 | 8.07 ± 4.80 |
| | | T ₁ % (n) | T ₂ % (n) | T ₃ % (n) |
| Depression | Normal (0–4) | 77.0 (104) | 67.6 (50) | 53.4 (47) |
| | Mild (5–6) | 12.6 (17) | 17.6 (13) | 13.6 (12) |
| | Moderate (7–10) | 5.9 (8) | 9.5 (7) | 15.9 (14) |
| | Severe – Extremely Severe (11+) | 4.4 (6) | 5 (4.0) | 15.0 (15) |
| Anxiety | Normal (0–3) | 88.9 (120) | 74 (54.0) | 72.7 (64) |
| | Mild (4–5) | 5.9 (8) | 12.3 (9) | 9.1 (8) |
| | Moderate (6–7) | 3.0 (4) | 6.8 (5) | 5.7 (5) |
| | Severe – Extremely Severe (8+) | 2.2 (3) | 6.8 (5) | 12.5 (11) |
| Stress | Normal (0–7) | 77.8 (105) | 66.2 (49) | 55.7 (49) |
| | Mild (8–9) | 8.9 (12) | 10.8 (8) | 8.0 (7) |
| | Moderate (10–12) | 8.9 (12) | 14.9 (11) | 17.0 (15) |
| | Severe – Extremely Severe (13+) | 4.4 (6) | 8.1 (6) | 19.3 (17) |

sustained or prevalent depression, anxiety and stress may leave AHPs with less capacity to cope with future surges and workplace disruption. The initial stage of an infection surge may be a time of vulnerability for AHPs. In this study, the highest DASS-21 scores coincided with rapidly accelerating case numbers, which led to a rare Code Brown (External Disaster) being declared in Victorian health services.²⁶ These findings highlight the complex influences on AHP health and wellbeing during the pandemic and suggest organisational supports may need to flex and adapt in response to the pandemic stage. Given diverse AHP practice contexts, further

detailed research is needed to understand the impacts of clinical and other contexts to inform the development of tailored support strategies.

There are very few studies evaluating the impact of pandemic workplace supports, and these findings indicate there has been a shift in psychosocial concerns experienced by AHPs since the ‘frantic’ early stages of the pandemic. Greater focus on mood and burnout may now be needed. The policy implications of COVID-19 for the healthcare system, state and federal government are broad. For many, the pandemic and subsequent public health measures

exacerbated existing inequities and risk factors associated with poor health outcomes, for example comorbid conditions and socioeconomic disadvantage.²⁷ Future policies need to consider how AHPs can be supported to safely continue working clinically during pandemics, especially to support their contribution to maintaining health and wellbeing for vulnerable and disadvantaged Australians.²⁸

Strengths and limitations

The use of a standardised psychometric tool is a strength of this study, with many studies in this field using *ad hoc* and investigator designed scales.⁹ The sample was small and underpowered but included respondents from many allied health disciplines. Significant workforce fluctuations during the pandemic and a lack of email tracking meant it was not feasible to establish accurate denominators for response rates. Our intention was to survey the same individuals across timepoints, but the pressures faced by AHPs at work and in their community posed significant challenges. The study was conducted at one metropolitan Australian tertiary health service and may have been biased if respondents with poor health and wellbeing participated more frequently. There are also no data available on AHP general health and psychosocial wellbeing prior to the COVID-19 pandemic available for comparison. Therefore, the findings may not generalise to other health services or settings.

Conclusion

The findings of this study indicate that Australian AHPs experienced worsening general health and psychological wellbeing as the COVID-19 pandemic continued. It appears that ongoing and targeted wellbeing initiatives are required to support AHPs during the pandemic.

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Data availability. The data to support this study will be shared upon reasonable request to the corresponding author.

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