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Brief Report

A longitudinal study of mental health in healthcare workers in Japan during the initial phase of COVID-19 pandemic: Comparison with the general population

Citation
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Abstract

The COVID-19 pandemic negatively impacted the mental health of people in Japan. Healthcare workers (HCWs) especially suffered from poor mental health, engaging with COVID-19 patients while protecting themselves from infection. However, a long-term assessment of their mental health in comparison to the general population remains to be conducted. This study evaluated and compared changes in mental health between these two populations over a six-month period. Measures of mental health, loneliness, hope and self-compassion were completed at baseline and at six-month follow-up. Two-way repeated measure ANOVA (Time x Group) identified that no interaction effects were present. However, at baseline, HCWs had higher levels of mental health problems and loneliness, and lower levels of hope and self-compassion than the general population. Furthermore, a higher level of loneliness was found in HCWs at six months. These findings highlight strong feelings of loneliness in HCWs in Japan. Interventions such as digital social prescribing are recommended.

Keywords: COVID-19; healthcare workers; mental health; loneliness; hope; self-compassion

Introduction

The COVID-19 pandemic has negatively impacted people's mental health, especially that of healthcare workers (HCWs) (Naser et al., 2020). In Japan, the pandemic has increased psychological strain on HCWs, resulting in higher levels of depression, anxiety and loneliness (Katsuta et al., 2021; Kotera, Ozaki, et al., 2021; Sasaki et al., 2021). However, the way in which psychological constructs such as loneliness, hope and self-compassion have changed during this period remains to be evaluated in this population. Loneliness is detrimental to mental health (Kotera, Chircop, et al., 2021; Surkalim et al., 2022), whereas hope aids in coping with COVID-19-related stress (Zhang et al., 2021). Self-compassion has also been found to help individuals cope with mental distress (Kotera et al., 2019; Kotera, Taylor, et al., 2021). Establishing how loneliness, hope and self-compassion change over time in relation to mental health will provide insights into potential risk and protective factors, aiding in the identification of effective interventions to improve the mental health of HCWs (Choi et al., 2020).

Methods

Online surveys were distributed to two Facebook groups attended by HCWs and the general population at baseline (June 2020). One group was for HCWs in Japan, sharing the latest news. The other group was an information source group that discussed the latest news. Those groups were chosen as they were (a) active, highlighting the latest news including COVID-19 news, and (b) none of the authors were a well-known figure in the group, limiting the biases. Participants received an email prompting them to complete a follow-up assessment at six months. At each point, the survey was open for four weeks. Participants had to (a) be at least 18 years old, (b) live in Japan, and (c) have a minimum of three years' experience of living in Japan.

The study period occurred at the end of the first wave (March-June 2020) and into the second wave (July-October 2020) of the COVID-19 pandemic in Japan; follow-up was during third wave (October 2020-February 2021). The survey comprised four short scales: The Patient Health Questionnaire-4 to measure mental health problems (Löwe et al., 2010); the Three-Item Loneliness Scale (Hughes et al., 2004); the Adult State Hope Scale (Snyder et al., 1996), and the Self-Compassion Scale-Short Form (Raes et al., 2011). At baseline, respondents were 142 HCWs (104 females [73%] and 38 males [27%]; Age Mean=39.9, SD=12.1 years) comprising 28 doctors, 34 nurses, 29 pharmacists, 27 rehabilitation workers, with the remaining 24 including social workers and radiographers. The general population respondents were 138 individuals (84 females [61%] and 54 males [39%]; Age Mean=46.4, SD=10.4 years) comprising 85 full-time employees, 29 self-employed, 11 part-timers, and the remaining 13 including homemakers. Healthcare worker sample involved more females and younger than the general population sample ($p < .05$). Completion rates at six-month follow-up were 54% (n=76) for HCWs and 64% (n=88) for the general population. There was no significant difference at the baseline between those who completed the two assessments and who did not on age, gender and the outcomes ($p > .05$). Our samples were assessed an adequate size as the number was greater than the number of dependent variables. Two samples were assessed equal using the Box's test of equality ($p > .05$).

After testing assumptions, a two-way repeated measure ANOVA was conducted with four dependent variables (mental health problems, loneliness, hope and self-compassion) and two independent variables (time and group) in order to understand

whether there was an interaction effect (Tabachnick & Fidell, 2013). Ethical approval was obtained from the university research ethics committee.

Results

There was not a significant interaction effect (p<.05) between time and group on any dependent variables (Pituch & Stevens, 2016): Mental health problems F(1, 75)=.27, p=.60; Loneliness F(1, 75)=.50, p=.48; Hope F(1, 75)=.01, p=.92; and Self-compassion F(1, 75)=.001, p=.97.

However, significant differences were found between HCWs and the general population. At baseline, all four variables were significantly different: In comparison to the general population, HCWs had higher levels of mental health problems (F(1, 137)=7.17, p=.008.) and loneliness F(1, 137)=3.15, p=.08.), and lower levels of hope (F(1, 137)=6.24, p=.01) and self-compassion (F(1, 137)=8.31, p=.005) than the general population. At six months, HCWs had higher levels of loneliness than the general population (F(1, 75)=6.64, p=.01). Borderline significance was found in the difference of mental health problems between the two groups at the six-month: HCWs had higher levels of mental health problems than the general population (F(1, 75)=3.95, p=.051). HCWs therefore had higher levels of loneliness than the general population at both time points (Table 1). No significant difference was found between the time points in both groups.

Table 1. Descriptive statistics and the results of the two-way repeated measures ANOVA (Time x Group)

	Healthcare Workers		General Population	
Baseline	M	SD	M	SD
Mental Health Problems	3.27_a	2.78	2.37_a	2.31
Loneliness	4.73_b	1.70	4.33_b	1.56
Hope	29.85_d	8.46	32.35_d	7.82
Self-Compassion	3.13_e	0.58	3.34_e	0.61
6 Months	M	SD	M	SD
Mental Health Problems	3.05	2.79	2.32	2.72
Loneliness	4.80_c	1.73	4.17_c	1.61
Hope	30.96	8.66	33.31	8.24
Self-Compassion	3.16	0.63	3.34	0.70

Subscripts$_{a\text{-}e}$ indicate significant difference between the two groups ($p < .05$).

Discussion

This study evaluated changes in mental health among HCWs and the general population in Japan over a six-month period (June-December 2020). Contrary to previous findings (Sasaki et al., 2021), neither HCWs nor the general population were found to exhibit increased mental health problems. Possible reasons include the difference in the survey timing and in the outcomes: Sasaki et al. assessed the baseline in March 2020 on job stress.

Differences between HCW and the general population on all dependent variables at baseline reflect the difficulties experienced by HCWs during the COVID-19 pandemic highlighted in previous studies (Katsuta et al., 2021; Sasaki et al., 2021). HCWs have been affected by elevated levels of isolation, stigmatisation and discrimination (Hong et al., 2021; Kotera, 2021; Kotera, Maxwell-Jones, et al., 2021; Stubbs & Achat, 2022), and subject to the effects of stress, including post-traumatic stress, on their physical and mental health (Kotera, Taylor, et al., 2021; Shaukat et al., 2020). In normal, non-pandemic circumstances, hope and self-compassion can be protective (Kotera, Llewellyn-Beardsley, et al., 2022). However, our results may have been affected by the temporal patterning of the pandemic because assessment points coincided with the first and third infection waves in Japan. HCWs' hope and self-compassion may therefore have been attenuated by two possible factors. Firstly, a lack of an available or anticipated COVID-19 vaccine and secondly, the continuing treatment of new cases at the assessment timepoints. It is therefore likely that there was insufficient time available to HCWs for self-compassion practice, indicating a possibility of compassion fatigue (Nishihara et al., 2022).

Although no significance was identified at the $p < .05$ threshold, given that the sample sizes were modest, comparing the mean scores may be helpful. HCWs' mean mental health score at follow-up was reduced by more than that of the general population. This suggests a trend for continued mental health difficulties in the general population (Kotera & Vione, 2020), whereas HCWs began to cope with the difficulties, despite their elevated risk of loneliness. However, HCWs still remained to have higher scores on mental health problems than the general population at the six-month point, suggesting that the mental health difficulties still existed in HCWs. Such a marginal but interesting finding indicates more research is needed to investigate this further.

A significant difference of loneliness between HCWs and the general population at both time points indicates a marked risk of loneliness in Japanese HCWs. This may be explained by more stringent restrictions on HCWs in and outside of the workplace, than on the general population (Kotera, Ozaki, et al., 2022). As loneliness has a robust link to mental health problems such as depression and anxiety (Palgi et al., 2020), loneliness in Japanese HCWs needs to be addressed.

Social prescribing, effective for reducing loneliness, is recommended as an intervention for loneliness in Australian HCWs (Stubbs & Achat, 2022) and has begun to be utilised in Japan too (The Yomiuri Shimbun, 2022). Social prescribing generally involves those in need being referred for practical or social support, often through a voluntary or community group (Kotera, Lyons, et al., 2021). To increase accessibility to social prescribing whilst limiting infection risk during COVID-19, a digital form of social prescribing has been recommended (Kotera, Green, et al., 2020; Patel et al.,

2021). It is therefore this study's recommendation that Japanese healthcare organisations seek to address loneliness in their staff through digital social prescribing.

Limitations of this study include the small sample size, low completion rate in HCWs, demographic differences between the two samples, and reliance on self-report measures, hence possible response biases (Kotera, Van Laethem, et al., 2020). These limitations indicate the findings position themselves as preliminary. Future research is needed to address these limitations and further inform the mental health of HCWs in Japan.

On behalf of all authors, the corresponding author states that there is no conflict of interest.

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