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Psychological impact of the COVID-19 pandemic on training of postgraduate year 1 doctors in Singapore

Kai Siang Chan^{1,2}, MBBS, Vishal G Shelat², FRCS, MCI, Faith Li-Ann Chia³, FAMS, FRCP

¹MOH Holdings Pte Ltd, ²Department of General Surgery, Tan Tock Seng Hospital, Singapore ³Department of Rheumatology, Allergy and Immunology, Tan Tock Seng Hospital, Singapore

Correspondence: Dr Kai Siang Chan, House Officer, MOH Holdings Pte Ltd, 1 Maritime Square, Singapore 099253. kchan023@e.ntu.edu.sg

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INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) pandemic has had a profound impact on both the community and healthcare workers. Major reforms have been made to the healthcare system to effectively manage the pandemic. Graduating medical students worldwide either experienced expedited graduation to provide manpower support or faced a delay in graduation due to the barring of clinical placements.⁽¹⁾ Postgraduate year 1 (PGY1) doctors were faced with the stress of transitioning to the clinical environment, along with added anxiety and fear of starting work during a pandemic.⁽²⁾ In Singapore, the student internship programme, which serves as a bridge for transition into clinical practice, was truncated for final year medical students. Hence, final year students began work one week earlier, with a special onboarding programme to facilitate transition to clinical practice. The onboarding programme enforced close supervision with supervised tag-on call duties for the first two weeks, with added evaluations to ensure smooth transition. Major re-shuffling was made to the clinical postings of PGY1 doctors to facilitate the demand for manpower in certain healthcare institutions. In light of this, we conducted a survey that aimed to evaluate the psychological impact of the COVID-19 pandemic on PGY1 doctors in our institution using the Perceived Stress Scale (PSS). Our secondary aim was to evaluate the impact of the pandemic on adequacy of training received by PGY1 doctors.

METHODS

We conducted an institutional, cross-sectional, anonymous survey of all PGY1 doctors during their final month (August 2020) of rotation. This survey was part of a routine end-of-posting review for PGY1 doctors. Participation in the survey was voluntary, and participants were assured that participation in the survey or the lack thereof would not impact their PGY1

evaluation. As this was a quality improvement exercise conducted by our institution's PGY1 faculty members, ethics approval was not required.

In light of the COVID-19 pandemic, the PSS was included to assess the level of stress experienced by PGY1 doctors. This would facilitate improvement to the PGY1 programme to better meet the students' psychological needs. The PSS is a validated scoring system used to assess the level of anxiety or stress in individuals, where a score of 0–13 indicates low stress and ≥ 27 indicates high levels of perceived stress.⁽³⁾ Frontline workers were defined as personnel who had direct contact with COVID-19 suspect or positive patients, i.e. personnel who were assigned to National Centre for Infectious Diseases (NCID), the main centre involved in the management and care of COVID-19 suspect or positive patients. The survey captured the following information: basic demographics; opinions and thoughts on the pandemic; PSS scores; and qualitative data on coping strategies. Logistic regression was performed to analyse the correlation between PSS scores and the opinions/thoughts of PGY1 doctors. Linear regression was performed to analyse the impact of the phase of training (first vs second vs third posting) on the PSS score.

Institutional policy framework for PGY1 doctors

The onboarding programme involved direct supervision, with weekly evaluations, feedback and counselling. PGY1 doctors who required more assistance were assigned additional tag-on calls to aid their transition. The onboarding programme, which was in addition to the standard orientation programme, included patient safety workshop, communication skills workshop (modified as telecommunication), wellness initiatives (adherence to duty hours and availability of counselling services) and an additional module on COVID-19. The COVID-19 module placed emphasis on the atypical presentations of COVID-19 and revision on the wearing of personal protective equipment (PPE).

Changes in the work routine of PGY1 doctors were largely institution-specific. In our institution, PGY1 doctors were placed in general wards, where they were not in direct contact with COVID-19 suspect or positive patients, although they might be exposed to COVID-19 positive patients with atypical presentations. Hence, PGY1 doctors were expected to comply with PPE policies and institutional COVID-19 protocols at all times.

RESULTS

The response rate of the survey was 71% (n = 54). The majority (n = 43, 79.6%) of PGY1 doctors were in their first clinical posting, with 1 (1.9%) and 10 (18.5%) of them in their second and third clinical posting, respectively. 35 (64.8%) PGY1 doctors were posted to the Department of General Medicine, 10 (18.5%) to the Department of General Surgery and 9 (16.7%) to the Department of Orthopaedics. Table I summarises the thoughts and opinions of PGY1 doctors regarding the COVID-19 pandemic; 20.4% of the respondents reported that the COVID-19 pandemic had negatively affected training. The PSS scores of the entire cohort and those on their first clinical posting are summarised in Table II.

Table I. Summary of thoughts and opinions of PGY1 doctors regarding the COVID-19 pandemic (n = 54).

Response	No. (%)
The COVID-19 pandemic has negatively affected training	11 (20.4)
Want to manage COVID-19 patients directly	22 (40.7)
Feel that work-life balance is adequate during the pandemic	48 (88.9)
Fear for family's and/or relatives' health and well-being	29 (53.7)

Table II. Perceived Stress Scale (PSS) scores of PGY1 doctors.

Item	Individual component of PSS*	
	Entire cohort (n = 54)	First clinical posting (n = 43)
1. How often have you been upset because of something that happened unexpectedly?	1.67 ± 0.80	1.70 ± 0.80
2. How often have you felt unable to control the important things in your life?	1.50 ± 0.82	1.58 ± 0.82
3. How often have you felt nervous or stressed?	1.78 ± 0.79	1.81 ± 0.79

4. How often have you felt confident about your ability to handle personal problems?	2.50 ± 1.11	2.42 ± 1.12
5. How often have you felt that things were going your way?	2.37 ± 0.96	2.33 ± 0.94
6. How often have you found that you could not cope with all the things you had to do?	1.35 ± 0.81	1.35 ± 0.81
7. How often have you been able to control irritations in your life?	2.28 ± 1.07	2.28 ± 1.10
8. How often have you felt that you were on top of things?	2.50 ± 0.91	2.37 ± 0.93
9. How often have you been angry because of things that happened that were outside of your control?	1.61 ± 0.94	1.63 ± 0.93
10. How often have you felt that difficulties were piling up so high that you could not overcome them?	1.26 ± 0.83	1.23 ± 0.84
PSS score [†]	2.85 ± 2.49	2.67 ± 2.18

**Data presented as mean ± standard deviation. Interpretation of individual components of the PSS: 0 = never; 1 = almost never; 2 = sometimes; 3 = fairly often; 4 = very often.*

†PSS score is calculated by reversing the responses to the four positively stated items (items 4, 5, 7 and 8) and summing across all scale items.

Logistic regression did not show that a higher PSS score (which reflects a higher level of stress) is correlated with (a) the opinion that work-life balance is inadequate ($B = -0.272$, 95% confidence interval [CI] 0.49 to 1.18, $p = 0.224$); (b) a fear for family's and/or relatives' health and well-being ($B = -0.033$, 95% CI 0.78 to 1.20, $p = 0.765$); and (c) not wanting to manage COVID-19 patients directly ($B = -0.079$, 95% CI 0.74 to 1.15, $p = 0.484$). Linear regression of the posting number (i.e. first, second or third posting) did not reveal any correlation with PSS score ($B = 0.136$, 95% CI -0.44 to 1.30, $p = 0.327$). Qualitative data on coping strategies centred around: (a) good social support ($n = 25/54$, 46.3%); (b) recreational activities such as exercise, sports and cooking ($n = 21/54$, 38.9%); (c) adequacy of rest and/or leave ($n = 5/54$, 9.3%); and (d) positive attitude ($n = 3/54$, 5.6%).

DISCUSSION

COVID-19 has infected 69.6 million people and caused 1.58 million deaths worldwide, and is one of the worst pandemics in history. Locally, medical schools and healthcare institutions have been affected due to public health policy regulations. Clinical postings of the PGY1 doctors were modified to optimise manpower resource allocation so that doctors who were

medical officer grade and above can be deployed to frontline duty at NCID.⁽⁴⁾ More PGY1 doctors were allocated clinical posting to the Department of General Medicine. Further, institutional policy framework barred PGY1 doctors from being posted to the frontline at NCID to manage COVID-19 patients. However, they may be at risk of being exposed to patients with atypical presentations of COVID-19 in the general wards.

Despite the pandemic, our survey demonstrated a positive response from PGY1 doctors in the area of work-life balance (n = 48, 88.9%). Our study also demonstrated low PSS scores among PGY1 doctors. The low levels of stress may be attributed to adequate and consistent infection prevention and control training, wellness initiatives of residency programmes, supportive faculties, and exclusion of PGY1 doctors from frontline duties.⁽⁵⁾ In a multiple residency programme longitudinal survey, Chew et al reported that living alone, having less problem-solving skills and not seeking social support were correlated with higher PSS scores.⁽⁶⁾ The positive response toward work-life balance and the low PSS scores in our survey may also be attributed to a reduction of clinical patient load as a result of diversion of resources away from business-as-usual activities. Nevertheless, stress is a perception and is confounded by multiple factors. Coping strategies such as having good social support (46.3%) and engaging in recreational activities (38.9%) may help in alleviating stress, apart from the abovementioned strategies. In addition, our study acknowledged the anxiety that PGY1 doctors felt for their family's and/or relatives' health and well-being. This anxiety is validated and to be expected even among senior doctors. A review by Spoorthy et al demonstrated that concerns for personal safety and mortality were factors that triggered stress in medical staff.⁽⁷⁾

With the reduction in clinical load, a fear that PGY1 doctors may have is the lack of clinical experience, which diminishes the quality of training received. Interestingly, despite the decreased patient load, a majority of the respondents (n = 43, 79.6%) did not report negative impact on training. This is contrary to the expected belief that the amount of clinical experience

(which includes the number of patient encounters) is positively correlated with the extent of clinical learning and training. A systematic review by de Jong et al discussed the relationship between patient mix/number of patient encounters and learning.⁽⁸⁾ Their study demonstrated a positive correlation between number of patient encounters and self-reported outcomes/written assessments but not clinical/practical examinations (including the Objective Structured Clinical Examinations). The perception that training is not affected could be true. With reduced clinical load, clinicians might be able to spend more time on teaching and training during routine activities like ward rounds. Thus, although the absolute number of patients was reduced, the relative time spent on teaching and training might have increased, and thus compensated for the overall experience.

Public health regulations mandate compliance to social distancing, work from home and other measures to control the pandemic. Healthcare institutions have embraced virtual platforms for teaching and learning. Essential PGY1 teaching activities were conducted virtually, which might have contributed to a positive learning experience for PGY1 doctors. In addition, the lack of negative impact on training may be attributed to an adequate work-life balance (Table I). Many studies have reported a correlation between work-life balance and/or working hour restrictions on fatigue, burnout and training.⁽⁹⁾ Locally, PGY1 doctors are expected to comply to a maximum of 80 hours per week, one day off in a seven-day period, ten hours of rest between shifts, and 24 + 6 hours for emergency duty shift.⁽¹⁰⁾ Indeed, it is plausible that the majority of respondents did not perceive a negative impact on their training during the pandemic due to the adequacy of work-life balance. However, several assumptions hold true for the correlation between work-life balance and training; confounders include change in patient load, bedside teaching and/or clinical experience – all of which are beyond the scope of this study. It is possible that the impact on procedural skills might be more obvious

at a later date when PGY1 doctors are expected to step up and assume the role of medical officers, but this will need to be determined in future studies.

To our knowledge, this is the first report that evaluated the impact of the COVID-19 pandemic on PGY1 doctors in a large academic centre using the PSS. Our study has several limitations. Firstly, this is a cross-sectional study where the majority of respondents were not expected to be at the frontline managing COVID-19 patients. This could have contributed to the lower PSS scores and positive work-life balance. There were several confounding factors that may have accounted for the level of stress experienced by the respondents, such as variations in coping strategies. We also did not collect responses using qualitative open-ended questions about the actual sources of stress. Secondly, in anticipation of healthcare worker stress during the pandemic, the education fraternity was vigilant to implement and enforce preventive measures, which could have led to lower stress among PGY1 doctors. Thirdly, as this is a single-institution study within Singapore, the findings may not reflect the experiences of PGY1 doctors in other institutions or countries. Moreover, the majority of our respondents were fresh graduates in their first clinical posting and hence, these findings may not be applicable to all PGY1 doctors. Lastly, our survey questionnaire included leading questions for simplicity of the survey which could have impacted the study result; admittedly, an open-ended neutral question using a Likert scale could have improved its validity.

In conclusion, this survey showed that PGY1 doctors who started their clinical posting during the COVID-19 pandemic reported low perceived stress.

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