Stress and resilience of paediatric healthcare workers during COVID-19

Dear Editor,

The coronavirus disease 2019 (COVID-19) pandemic has caused multiple changes in healthcare systems as governments implement measures to boost acute services.

Healthcare workers (HCWs)¹ across different specialties are reported to have decreased quality of life and increased stress,² further aggravated during the pandemic.

Although COVID-19 has lower disease severity and mortality in paediatrics,^{3,4} paediatric HCWs face a similar yet different set of challenges while caring for children, irrespective of whether they are COVID-19 positive or at-risk patients. HCWs have to be also mindful of risks from accompanying caregivers who attend healthcare services with children. Yet, the psychological well-being of paediatric HCWs during this pandemic has been less well studied.^{5,6}

Hence, we measured the quality of life and stress in HCWs working in a paediatric department and compared the stress between clinical HCWs (doctors, nurses and allied health professionals) and non-clinical HCWs (laboratory staff) as a control. We also explored risk perception of COVID-19 and its relation to these psychological markers. As resilience is a known effective tool against burnout and stress,⁷ this was also evaluated.

We performed a cross-sectional, voluntary, anonymous survey using a secured online platform (form.gov.sg), at the Department of Paediatrics, National University Hospital, Singapore between 21 April and 29 May 2020 to coincide with the circuit breaker (Singapore's version of lockdown) period via email.

Ethics approval was received (NHG DSRB Ref: 2020/00361) and implied consent was obtained when participants submitted the survey.

Participants provided demographic information, answered questions related to the pandemic, and completed validated tools. The Professional Quality of Life (ProQOL) is a measure of quality-of-life one feels in relation to their profession (assessing positive and negative aspects of caring); Perceived Stress Scale (PSS)⁸ is a measure of stress, designed to determine how unpredictable, uncontrollable, and overloaded respondents find their lives (scores range from 0 to 40,

higher scores indicate higher perceived stress); and the 25-item Connor-Davidson Resilience Scale (CD-RISC-25)⁹ is a measure of resilience (scores range from 0 to 100, higher scores reflect greater resilience). ProQOL was not completed by non-clinical HCWs, given the nature of questions on caring for patients.

Data were analysed using SPSS Statistics software version 25.0 (IBM Corp, Armonk, US). Variance and chi-square were used for comparative analysis.

Of the 193 HCWs in the department, 102 responded (53%). Table 1 shows that, in response to the question about the perceived risk of contracting COVID-19 from the workplace/community, the numbers were comparable in the 2 groups—clinical and non-clinical—with approximately a quarter perceiving any risk. Majority were satisfied with workplace measures to reduce risk of transmission of COVID-19 and felt that their family members/friends are not likely to avoid contact with them because they work in high risk areas. Significantly higher proportion of clinical HCW were satisfied with these measures compared to the non-clinical HCWs ($P=0.004$).

Only 6% of respondents reported high stress scores on the PSS, with no significant difference between the clinical and non-clinical groups. Clinical HCWs had a significantly higher mean resilience score of 74.7 compared to non-clinical HCWs' 66.3 ($P=0.005$). The ProQOL scores for clinical HCWs are also included in Table 1.

Despite the same measures being put in place across the department, satisfaction with measures to reduce risk of transmission seems significantly less satisfactory among non-clinical HCWs. This could be because of the pandemic preparedness exercises performed for clinical HCWs, giving them a better risk perception.

Nonetheless, the risks are real for the clinical HCWs in hospitals. This can explain the higher proportion of clinical HCWs who had a trend towards high perceived stress on PSS compared to none for non-clinical HCWs. It could also be due to the survey being done at a time when it was not yet clear that COVID-19 was relatively more benign in children; therefore, the perceived threat was still considered high, especially in clinical HCWs caring for children. Compared to other

Table 1. Comparison of risk perception, PSS scores and CD RISC scores between clinical and non-clinical HCWs

	All (N=102) ^a	Clinical HCWs (n=59) ^b	Non-clinical HCWs (n=43)	P value
Risk perception, n (%)				
How do you perceive your risk is of contracting COVID-19 from the work place?				
1 (not at all likely)	12 (11.8)	4 (6.8)	8 (18.6)	0.99
2	29 (28.4)	22 (37.3)	7 (16.3)	
3 (neither likely nor unlikely)	36 (35.3)	18 (30.5)	18 (41.9)	
4	20 (19.6)	12 (20.3)	8 (18.6)	
5 (extremely likely)	5 (4.9)	3 (5.1)	2 (4.7)	
How do you perceive your risk is of contracting COVID-19 from the community?				
1 (not at all likely)	7 (6.9)	3 (5.1)	4 (9.3)	0.545
2	20 (19.6)	14 (23.7)	6 (14.0)	
3 (neither likely nor unlikely)	48 (47.1)	25 (42.4)	23 (53.5)	
4	23 (22.5)	14 (23.7)	9 (20.9)	
5 (extremely likely)	4 (3.9)	3 (5.1)	1 (2.3)	
Are you satisfied with the measures being taken at the workplace to reduce the risk of transmission of COVID-19?				
1 (not at all likely)	1 (1.0)	0 (0)	1 (2.3)	0.004
2	0 (0)	0 (0)	0 (0)	
3 (neither likely nor unlikely)	23 (2.5)	7 (11.9)	16 (37.2)	
4	50 (49.0)	30 (50.8)	20 (46.5)	
5 (extremely likely)	28 (27.5)	22 (37.3)	6 (14.0)	
I feel that my family members and friends avoid contacts with me, because I work in a “high-risk” environment				
1 (not at all likely)	55 (53.9)	34 (37.6)	21 (48.8)	0.391
2	19 (18.6)	8 (13.6)	11 (25.6)	
3 (neither likely nor unlikely)	14 (13.7)	7 (11.9)	7 (16.3)	
4	9 (8.8)	7 (11.9)	2 (4.7)	
5 (extremely likely)	5 (4.9)	3 (5.1)	2 (4.7)	
Have you been in contact with anyone diagnosed with COVID-19				
In the work place:				
No	85 (83.3)	42 (71.2)	43 (100.0)	<0.0005
Yes	17 (16.7)	17 (28.8)	0 (0)	
In the community:				
No	102 (100)			
Yes	0 (0)			
Have you been served the following – stay-at-home notice, quarantine, leave of absence OR have you been tested positive for COVID-19?				
No	91 (89.2)	52 (88.1)	39 (90.7)	0.680
Yes	11 (10.8)	7 (11.9)	4 (9.3)	
Stress, resilience and quality of life scores, n (%)				
Perceived Stress Scale^c				
Low stress	40 (39.2)	24 (40.7)	16 (37.2)	0.071
Moderate stress	56 (54.9)	29 (49.2)	27 (62.8)	
High stress	6 (5.9)	6 (10.2)	0 (0)	
CD RISC, Mean (SD)	71.1 (15)	74.7 (13.92)	66.3 (15.50)	0.005
ProQOL^d				
Compassion satisfaction				
Low	0 (0)	0 (0)	NA	
Moderate	32 (54.2)	32 (54.2)		
High	27 (45.8)	27 (45.8)		

Table 1. Comparison of risk perception, PSS scores and CD RISC scores between clinical and non-clinical HCWs (Cont'd)

	All (N=102) ^a	Clinical HCWs (n=59) ^b	Non-clinical HCWs (n=43)	P value
Stress, resilience and quality of life scores, n (%)				
Burnout				
Low	38 (64.4)	38 (64.4)	NA	
Moderate	21 (35.6)	21 (35.6)		
High	0 (0)	0 (0)		
Traumatic stress				
Low	43 (71.2)	43 (71.2)	NA	
Moderate	16 (27.1)	16 (27.1)		
High	1 (1.7)	1 (1.7)		

CD RISC: Connor-Davidson Resilience Scale; HCW: healthcare worker; SD: standard deviation

^a 81.4% female, 83.3% aged ≤50 years

^b Areas where they spent doing majority of their clinical work in the past month: Outpatient service/clinics=54.2%, Inpatient (general ward service)=20.3%, Emergency Department=11%, Intensive Care Unit=10.2%, Inpatient (infectious disease isolation ward service) (COVID-19 suspected cases)=3.4%

^c Perceived Stress Scale scores: Mild=0–13, Moderate=14–26, High=27–40

^d ProQOL (Professional Quality of Life): Compassion satisfaction scores – Low: ≤43; Burnout scores – High: ≥57; Traumatic stress scores – High: ≥57

studies,¹⁰ our study population had a lower proportion of those with moderate/high PSS scores, mostly clinical HCWs, possibly because the number of paediatric cases of COVID-19 remained low. Furthermore, the previous experience of severe acute respiratory syndrome outbreak may have given a greater amount of confidence in managing the current one even at an individual level. Additionally, active risk management and frequent communication of plans to staff may have helped to remove the fear and given them more confidence in the hospital management system.

Among clinical HCWs, it is reassuring that despite more than half showing moderate to high stress, ProQOL was favourable. A potential protective factor is higher resilience scores, which is known to be inversely related to burnout and was higher than those published for doctors.⁷

The study has limitations. The ProQOL was measured only in the clinical HCWs and hence could not be compared. It may have been also interesting to compare the stress of HCWs in emergency department, intensive care and COVID-19 isolation wards since they were most at risk. Unfortunately, we were constrained in terms of the total sample size based on the staff strength of the department, as COVID-19 infections are generally low in paediatric patients. We also did not measure other factors at personal and professional level that may contribute to stress and burnout. Qualitative study exploring these factors may shed more light. The 2-month time period in this study might be insufficient

to truly assess ProQOL. The scores may evolve with the pandemic and changing risks over time. Stress measured does not reflect chronic stress, which might have a greater impact on ProQOL and resilience in the longer run. It may be interesting to repeat the study at a later date.

In conclusion, paediatric HCWs did not report increased stress during the COVID-19 pandemic and showed high resilience. While the long-term impact remains to be studied, it highlights the importance of ensuring sustained and consistent measures to improve staff confidence in their risk of contracting COVID-19, more so for the non-clinical HCWs who also face the similar conditions at the workplace despite no direct patient contact. Finally, building resilience through programmes such as mental health training¹¹ could be an important facet that institutions and leadership could target to help all staff maintain ProQOL in times of adversity.

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