ORIGINAL ARTICLE

Mental Health Burden from COVID-19: Findings from a Single Hybrid Hospital in Northwest Malaysia

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ABSTRACT

Introduction: Mental and emotional exhaustion is highly common during pandemics, therefore routine monitoring would allow for prompt intervention to prevent institutional collapse. Our study aimed to explore the prevalence of mental and emotional burnout among healthcare workers in Hospital Tuanku Fauziah, Perlis during the early COVID-19 pandemic in Malaysia. **Method:** Universal sampling was performed on healthcare workers from Hospital Tuanku Fauziah, Perlis, Malaysia. Screening was done for depression, anxiety and stress level using the Depression, Anxiety and Stress Scale-21 (DASS-21) questionnaire in both Malay and English versions, from 1 March 2020 until 31 December 2020. The project was part of the state's initiative to screen for mental and emotional burnout among healthcare workers during the early pandemic times. **Results:** There were 1,161 returned questionnaires. Majority were between the age of 30 to 39 years old (n=529, 45.6%), female (n=834, 71.8%) and were from clinical-based department/unit (n=742, 63.9%). Ninety (7.7%) respondents scored severe and extremely severe for depression, anxiety, or stress. Clinicians were found to have 4.09 times increased in odds to require psychiatric intervention (95% CI: 2.00, 8.34, p<0.001) and persons from non-clinical work divisions also had 2.11 increased odds to require psychiatric intervention (95% CI:1.53, 2.93, p<0.001). Twenty-eight (2.4%) respondents required continuing psychiatric assessment and follow-up due to panic attacks, worsening panic disorder and acute stress reaction with anxiety symptoms. **Conclusion:** Regular assessments of mental and emotional exhaustion among healthcare staff should be performed to safeguard their mental health and ensure prompt management.
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Keywords: Healthcare workers, Anxiety, stress, Depression, Mental health, Malaysia

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INTRODUCTION

The World Health Organization (WHO) was first alerted on December 31st of 2019 when several clinical cases of highly infectious and atypical lung infection started in Wuhan province of Hubei, China. The inflicted pathogen was subsequently identified as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) and was later implicated in a constellation of respiratory and systemic signs and symptoms of coronavirus disease-2019 (COVID-19) (1).

As the pandemic began to infiltrate the northern region of Malaysia, including the state of Perlis, it brings a lot of fear, anxiety, and panic to the civilians, not to mention, the healthcare community. Additionally, Perlis was also the first state in Malaysia to revoke Muslim congregational Friday prayer (2). The first COVID-19 case in Perlis was recorded on March 13th, 2020, and the first death from COVID-19 in the state was announced four days later.

Hypothetically, there would be greater panic and anxiety among the healthcare workers (HCWs) (3,4) since they are at substantially higher risk of exposure to contract the infection as compared to the general population (5,6). Healthcare workers who were directly involved in the response to COVID-19 were required to work in challenging and unprecedented conditions, risking being infected and infecting their loved ones (5). Furthermore, Asians were also found to be at even higher risk of adverse outcomes from COVID-19, hence this knowledge may risk psychological injuries amongst them as well (5). This is further supported

by a local study among 200 healthcare workers from Kuala Lumpur which determined that the prevalence of anxiety and depression during COVID-19 pandemic stands high at 29.5 to 36.5% (7). However, there is a gap in literature with regards to the determining factors to poor psychological coping during a pandemic in our population. Therefore, our study aimed to assess and evaluate the mental health burden of COVID-19 and the predictive factors to requiring psychiatric intervention among healthcare workers in Hospital Tuanku Fauziah, Perlis during the first wave of COVID-19 in Malaysia.

MATERIALS AND METHODS

Study design

This cross-sectional study was conducted from 1st March 2020 to 31st December 2020 at Hospital Tuanku Fauziah (HTF), Perlis, Malaysia. HTF is the only tertiary hybrid hospital in the state of Perlis.

The study involved distribution of a self-administered Depression, Anxiety and Stress Scale-21 (DASS-21) questionnaire via Google form, WhatsApp messaging application, personal electronic mail, social networking platform and online QR code among healthcare workers in HTF. Only healthcare workers from HTF were included and the respondents were reminded to strictly circulate the link for internal use only.

Universal sampling was employed. The large scale assessment was also part of the state's initiative to screen for mental and emotional burnout among all healthcare workers in Perlis. The questionnaire targeted all healthcare workers, including the medical specialists, medical officers, house officers, nursing staff, medical assistants, administrators, allied health professionals and all private and governmental supporting staff. The average time taken to complete the questionnaire was between 10 to 20 minutes.

During data cleansing, the respondents were screened for their workplace to ensure only healthcare workers from the study site were included in further analysis.

Study instrument

The validated three-factor structure of Depression, Anxiety and Stress Scale (DASS-21) in both Malay and English language was used in this study (8). DASS-21 is a frequently used instrument to evaluate individual depressive and anxiety complaints. DASS-21 is the shortened version of the more elaborated DASS questionnaire developed by Lovibond and Lovibond to assess symptoms of depression, anxiety, and stress among adults (9).

The structured DASS-21 questionnaire consisted of 21 items divided into three subscales. The three self-reported scales were designed to measure the respondents' emotional state using a 4-point Likert scales, ranging from 0 to 3 (0=did not apply to me at all, 1=applied to me to some degree, 2=applied to me to a considerable degree, 3=applied to me very much). The cut-off scores for conventional labels were as previously defined (Table I) (9).

Table I. Cut-off scores for depression, anxiety and stress level based on DASS scoring system

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	≥28	≥20	≥34

In order to interpret the total DASS scores, the summed numbers from each subscale was multiplied by 2, and the final number was later coded as either 'normal' (score 0-20), 'mild' (score 21-40), 'moderate' (score 41-60), 'severe'(score 61-90) and 'extremely severe' (score 91-120). Some studies used a single cut-off at 60 (10). Apart from the DASS-21 assessment, information on sociodemographic details, including age, gender, ethnicity, and the personnel's section of healthcare division were also collected.

Sample size calculation

Sample size estimation was calculated to determine the minimum sample size required to adequately determine the predictive factors to poor psychological coping among our study population (hence, requiring psychiatric intervention), using the two population means formulae. Prior data indicated that negative coping predicted increased anxiety whereby the mean negative brief religious coping scale among doctors was 19.7 $\pm$ 7.00 and the mean score among nurses was 25.1 $\pm$ 2.70 (7). Thus, a minimum sample size of 15 samples per group is needed to be able to reject the null hypothesis with a probability of 80%. The Type I error probability associated with this test of this null hypothesis is 0.05. With an additional of 20% dropout rate, the minimum sample size required is 19 samples per group (with an estimated total of 40 respondents). However, universal sampling was performed on all healthcare workers in Hospital Tuanku Fauziah, Perlis as the project is part of the state's large-scale initiative to screen for mental exhaustion among healthcare workers in Perlis during the early pandemic times.

Statistical analysis

The analysis was performed using IBM SPSS Statistics for Windows Version 20.0 (IBM Corp, 2011). The data was manually entered into the software before the cleaning process took place. Descriptive statistics were used for selected variables, presented as frequencies and percentage. Numerical data, such as age was presented as mean and standard deviation. Simple logistic regression was performed to determine the

odds of selected variables in predicting requirement of psychiatric intervention based on extreme scores of DASS-21 guided by previous literatures and deemed potential factors, whereas multiple logistic regression was performed to determine the best predictive model to simulate the interplay of variables in predicting subjects who would require psychiatric intervention based on extreme scores of DASS-21. Any variable having a significant univariate test based on the Wald statistic from the simple logistic regression with a p-value cut-off point of were selected as candidates for the multiple logistic regression analysis. A probability value (p-value) of less than 0.05 is deemed statistically significant.

Ethical approval

The study was registered with the National Medical Research Register, Ministry of Health Malaysia (NMRR-21-660-59021) and approved by the Medical Research and Ethics Committee, Ministry of Health Malaysia (KKM/NIHSEC/P21800(4)).

RESULT

A total of 1,161 healthcare workers from Hospital Tuanku Fauziah, Perlis, Malaysia from various clinical or non-clinical division completed the survey. Majority were female (n=834, 71.8%) with the mean age of 34.6 ±7.90 years old. Malay constitutes the highest ethnicity among our study respondents (n=1,096, 94.4%), followed by Chinese (n=33, 2.8%). There were 7.7% of our respondents who scored severe and extremely severe for depression, anxiety or stress (Table II).

Table II. Baseline socio-demographics and mental health profile among study respondents. (N=1,161)

Variable(s)	*n*	%
Sociodemographic profile		
Age (years)		
Below 20	22	1.9
21-29	325	28.0
30-39	529	45.6
40-49	218	18.8
50 and above	67	5.8
Gender		
Male	327	28.2
Female	834	71.8
Ethnicity		
Malay	1,096	94.4
Chinese	33	2.8
Indian	25	2.2
Others	7	0.6

CONTINUE

Table II. Baseline socio-demographics and mental health profile among study respondents. (N=1,161) (CONT.)

Variable(s)	*n*	%
Nature of job area		
Clinical	742	63.9
Non-clinical	419	36.1
Mental health profiles among study respondents		
Depression		
Normal	1,042	89.8
Mild	58	5.0
Moderate	26	2.2
Severe	18	1.6
Extremely severe	16	1.4
Anxiety		
Normal	959	82.6
Mild	68	5.9
Moderate	56	4.8
Severe	33	2.8
Extremely severe	45	3.9
Stress		
Normal	988	85.1
Mild	60	5.2
Moderate	64	5.5
Severe	30	2.6
Extremely severe	19	1.6
Total DASS scoring		
Normal	901	77.6
Mild	85	7.3
Moderate	85	7.3
Severe	42	3.6
Extremely severe	48	4.1

Most respondents (n=742, 63.7%) were from clinical division, whereas 419 (36.1%) were working in non-clinical areas, including as hospital cafй operators, office administrators, safety guards and supporting technicians. Additionally, 455 (39.2%) of the overall respondents were staff nurses in various departments meanwhile six (0.5%) were from administrative divisions.

Among all the study respondents, 85 (7.3%) had 'moderate', 42 with 'severe' (3.6%) and 48 scored 'extremely severe' (4.1%) based on total DASS-21 assessment, therefore requiring psychiatric intervention and expert assessment. Out of this, only 28 (2.4%) respondents required continuing psychiatric evaluation due to persistent panic attacks, worsening panic disorder,

and acute stress reaction with anxiety symptoms (based on DSM-V criteria). All of them eventually recovered with psychotherapy, some still required short-term benzodiazepine for sleep and anxiety symptom.

Out of the total 287 supporting staff, 12 (4.2%) scored 'extremely severe' on total DASS assessment as compared to only one (5.3%) medical specialist. None of the respondents from the administrative division scored 'extremely severe' on total DASS scoring.

Logistic regressions were performed to determine the factors associated with psychiatric intervention (Table III). Multiple logistic regression determined that non-clinical division and profession as clinicians were significantly associated with requirement for psychiatric intervention. Clinicians were found to have 4.09 increased in odds to require psychiatric intervention (95% CI:2.00, 8.34, p<0.001) and those working in non-clinical fields were also at increased odds of requiring psychiatric intervention by 2.11 times during healthcare crisis.

Table III. Factors associated with mental health assessment requiring psychiatric intervention.

Variable(s)	No intervention *n* (%)	*Intervention n* (%)	*Crude OR*	*95% CI*	*p-value*[a]	*Adjusted OR*	*95% CI*	*p-value*[b]
Age[c]	34.9 ± 7.98	33.1 ± 7.91	0.97	(0.95, 0.99)	0.010*	-	-	-
Gender								
Male	278 (85.0)	49 (15.0)	0.99	(0.69, 1.42)	0.958	-	-	-
Female	708 (84.9)	126 (15.1)	1.00	(ref)				
Ethnicity								
Malay	928 (84.7)	168 (15.3)	1.00	(ref)				
Chinese	29 (87.9)	4 (12.1)	0.76	(0.26, 2.20)		-	-	-
Indian	24 (96.0)	1 (4.0)	0.23	(0.03, 1.71)	0.359			
Others	5 (71.4)	2 (28.6)	2.21	(0.43, 11.48)				
Department								
Clinical	657 (88.5)	85 (11.5)	1.00	(ref)	<0.001*	1.00	(ref)	<0.001*
Non-clinical	329 (78.5)	90 (21.5)	2.11	(1.53, 2.93)		2.11	(1.53, 2.93)	
Profession								
Clinicians	203 (80.6)	49 (19.4)	0.94	(0.63, 1.42)		4.09	(2.00 ,8.34)	
Paramedics	521 (89.8)	59 (10.2)	0.44	(0.30, 0.65)	<0.001*	1.34	(0.80, 2.31)	<0.001*
Support staff	262 (79.6)	67 (20.4)	1.00	(ref)		1.00	(ref)	

Notes: [a]Simple logistic regression; [b]Multiple logistic regression (Backward LR method) after controlling for age, gender and ethnicity;[c]presented as mean (standard deviation).
**Statistically significant*

DISCUSSION

Our study found a compelling number of healthcare workers who were affected during the first wave of COVID-19 in Perlis, as up to 15% of our study respondents fulfilled the criteria for further psychiatric evaluation (scored 'moderate', 'severe' and 'extremely severe' on total DASS-21 assessment). We found that 90 (7.7%) respondents scored 'severe' and 'extremely severe' for depression, anxiety or stress based on total DASS scores, requiring psychoeducation, supportive counselling, and psychological first-aid, trained on relaxation and breathing technique, which were all part of the recommended psychological support service (11). This indicates the significant psychological adversity among healthcare workers stemming from COVID-19, potentially contributed by the increased workload and physical fatigue, individual fear and anxiety from contracting disease, and the unmet needs of psychological support during a pandemic.

Our study also highlighted that both clinicians and non-clinical staff were just as equally affected during a pandemic. Clinicians were found to have higher odds of requiring further psychiatric intervention as compared to the non-clinical staff. Such findings are widely anticipated, as clinicians are directly managing the positive COVID-19 cases and potential COVID-19 patients (5), hence they carried increased risk of contracting the disease themselves. Furthermore, they may repress their emotions and hide physical exhaustion to fulfill the public expectation of them as good stress managers even in stressful and unprecedented ambience (12,13), leading to eventual emotional burnout.

On the other hand, the work routine of those working in non-clinical divisions may also be affected as they also risked exposure to potential COVID-19 patients at the receiving desk of hospital entrances (14,15). They had to interview patients' travel history, assess for suggestive symptoms, and monitor individual temperature before allowing these patients into hospital premises. On the other hand, administrative staffs also had to constantly revise the macro aspects of COVID-19 action plan and disseminate the updated information to patients and staffs, while the allied health professionals had to run more biological laboratory samples (15). Therefore, all categories of healthcare workers seemingly took an impact from COVID-19 pandemic, in different ways.

Our findings resonated in several other local and worldwide studies on the impact of COVID-19 pandemic on the mental health of medical front-liners (4,6,16). Consistent patterns of psychological reactions were seen across various professions in the healthcare industry during the pandemic due to increased workload, fears of contagion for themselves and families, and the exhaustion from caring for the critically ill (7,17).

Our study is limited in view of its methodological approach. As the data collection was mainly from a self-administered questionnaire, the respondents may choose not to disclose their introspective personal feelings, thereby potentially affecting the study interpretation. We also had no baseline data with regards to the mental health profile of the healthcare workers prior to the healthcare crisis, hence restricts comparison with regards to the prevalence of mental health before, and with the ongoing pandemic.

CONCLUSION

Mental health promotion and stress management strategies should be central to align the organization particularly in times of pandemic. In addition, campaigns, and awareness programme to introduce and inform the benefit of the Mental Health and Psychosocial Support (MHPSS) service should be regularly performed to encourage self-recognition of early sign and symptoms of psychological disorders, if present.

The inception of MHPSS service began in the early dawn of COVID-19 pandemic circa March 2020 and was offered at every state and district level in Malaysia, coordinated by respective State Health Department. The MHPSS team may include public health physician, family medicine specialist, psychiatrist, counsellor, psychology officer, mental health experts or volunteers, and they perform mental health assessment using validated clinical tools and provide mental health consultation and referral, accordingly (18). In our study, we found that the clinicians were at greater risk of mental and emotional burnout, hence should be targeted for intervention and reached out by the MHPSS team during any healthcare crisis in the future.

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