

Factors influencing the psychosocial impact of COVID-19 pandemic on healthcare workers and their level of satisfaction towards organisational efforts

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ABSTRACT

Introduction: The Coronavirus Disease 2019 (COVID-19) pandemic has had a dramatic physical, personal, and emotional effect on healthcare workers (HCWs). The main objective of this study was to identify risk factors associated with psychosocial distress among HCWs working in a hospital environment during the pandemic.

Materials and Methods: A cross-sectional descriptive survey involving HCWs of a tertiary care hospital was completed using an online survey software (Google Forms). The survey collected respondents' sociodemographic data, perception towards personal protective equipment (PPE) and knowledge about COVID-19, and satisfaction score towards performance of the World Health Organization, the Malaysian police, civil service, healthcare system, and government. Psychosocial distress was assessed using the 12-item version of the General Health Questionnaire (GHQ-12).

Results: A total of 675 responses were collected. Female gender and doctors were identified to be associated with greater psychosocial impact from the pandemic among the HCWs. Several factors such as self-rated health status, confidence level towards PPE in disease prevention, degree of familiarity in using PPE, knowledge regarding care for COVID-19 patients, and capability in answering questions asked by the public regarding the disease were found to be associated with the degree of psychosocial impact from the pandemic.

Conclusion: This study identified the vulnerable groups of HCWs at risk of psychosocial distress and its associated risk factors. These findings highlight the need for strategies to reduce risks and to prioritise psychological support and intervention during the pandemic.

KEYWORDS:

Psychosocial factor, COVID-19, Healthcare workers

INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) is the largest outbreak of atypical pneumonia since the severe acute respiratory syndrome (SARS) outbreak in 2003. It was first revealed in late December 2019, but later declared as a pandemic and a global health threat by the World Health Organization (WHO) on 11th March, 2020, as the number of confirmed cases had risen exponentially around the world.¹

The Federal Government of Malaysia implemented the 'movement control order (MCO)' as a preventive measure on 18th of March, 2020.² The order involves a general prohibition on mass movement and gatherings across the country. Additionally, a range of measures have been implemented – including prohibition of sporting, religious, social, and cultural activities; closure of all kindergartens, schools, institutions of higher education, and skills training institutes; closure of all business premises except for supermarkets, public markets, and grocery or convenient stores selling essential goods; and the closure of all government and private premises except for those involved in essential services.^{2,3} For premises that were allowed to operate, they were required to follow strict standard operating procedures set by the authorities.^{2,3} The MCO was finally relaxed on 4th May, 2020, with a 'conditional MCO (CMCO)' implemented, which allowed certain business sectors to resume operations.⁴ The CMCO was followed by 'recovery MCO' from 10th June until 31st August, which allowed 'almost all' social, educational, religious, and business activities, as well as economic sectors to reopen in phases while adhering to standard operating procedures.⁵ Our study period coincided with the transition from CMCO to recovery MCO.

Sarawak General Hospital (SGH) is a tertiary care state hospital with 1005-bed capacity. It is one of the hospitals in Ministry of Health of Malaysia designated for admitting patients with suspected COVID-19 termed as 'Person Under Investigation (PUI)' and confirmed COVID-19 infection. Since the beginning of the pandemic, several infection control directives have been implemented. There was a reduction of

patient caseload for outpatient clinics, endoscopy services, and elective operating theatre. The entry into hospital for patients and staff had been limited to certain entrances with mandatory temperature reading, symptoms/exposure checking through questionnaire, and scanning of the MySejahtera web app. Hospital staff were required to wear surgical masks at all times.

Healthcare workers (HCWs) working in hospitals caring for patients with suspected or confirmed COVID-19 infection are at high risk of nosocomial spread. There have been reports of high rates of infection and even death from COVID-19 among HCWs.⁶ Given the magnitude of the pandemic, coupled with the high physical and mental demands in performing duties, it is not unexpected that adverse psychological outcomes occur among HCWs. Medical HCWs who were directly involved in diagnosis, treatment, and care of patients with COVID-19 were reported to have a higher prevalence of psychosocial problems compared with nonmedical HCWs.⁷ Among the psychological impact reported were depression, anxiety, insomnia, somatisation, obsessive-compulsive symptoms, acute stress symptoms, emotional distress, burnout, stigmatisation, and post-traumatic stress symptoms.⁷⁻¹³ The psychosocial outcomes caused by an outbreak of infectious disease are influenced by a variety of factors. The constant changes in infection control policy and procedure in response to evolving understanding of the disease cause confusion and anxiety among the HCWs. Other stressors include infection-related fears, the ever-increasing number of confirmed and suspected cases, depletion of personal protective equipment (PPE), overwhelming workload, lack of treatment response drugs, stigmatisation, and widespread media coverage.⁷⁻¹⁰ Until now, little is known about the psychosocial impact of the COVID-19 pandemic on HCWs in Malaysia.

With the current focus of the health authorities mainly on prevention, management, and limitation of the spread of COVID-19, it is important to evaluate how both the pandemic and the strategies adopted to deal with it have impacted the psychosocial well-being of the HCWs and identify factors that are associated with psychosocial distress, so that the necessary steps can be taken to mitigate the problems.

MATERIALS AND METHODS

Study design

This study was a cross-sectional, online survey conducted from June 1st to June 13th, 2020. The survey was performed using Google Forms, and the link to access the survey was distributed via WhatsApp messages to all willing employees (both medical and non-medical HCWs) who worked at SGH. Participation in this survey was voluntary and consent was obtained prior to the start of the survey. The participants must have a legal capacity to consent and be able to read and understand written English. Participants who had been diagnosed to have a psychiatric illness or unable to complete the questionnaire were excluded from the study. Institutional approval was obtained from the Medical Research and Ethics Committee (MREC), Ministry of Health of Malaysia prior to commencement of the study (NMRR-20-1271-55333).

Questionnaire

The survey consisted of questions categorised into four main sections: sociodemographic, 12-item version of the General Health Questionnaire (GHQ-12), knowledge and confidence level towards PPE, and the degree of satisfaction towards the performance of specific organisation and service provider. The first section gathered information on the age, gender, ethnicity, education level, marital status, underlying chronic medical illnesses, previous diagnosis of COVID-19, occupation, workplace, employment status, and tenure of the respondents. The second section assessed the psychosocial well-being of the respondents using GHQ-12. It is the shortest version of the original 60-item questionnaire (GHQ-60) and is particularly useful when used in busy clinical settings. It has been widely used in many countries as a screening tool to detect psychological morbidity.^{14,15} It consists of 12 items, each one assessing the severity of a mental problem over the past few weeks using a bi-model scale (0-0-1-1) or a 4-point Likert-type scale (from 0 to 3). The 4-point Likert-type scale was used in this study because it produces a more acceptable distribution of scores for parametric analysis with less skew and kurtosis.¹⁵ The total score generated ranges from 0 to 36, with higher score indicating worse mental health.¹⁶ Previous studies revealed that the GHQ-12 should be considered as multidimensional instrument as it contains three factors, which are anxiety and depression, social dysfunction, and loss of confidence,^{14,15} and is capable of assessing several distinct aspects of distress.¹⁷ The third section measured the self-rated health status, from very poor to excellent. Additionally, respondents were asked about their perception towards sufficiency of PPE in their workplace; their confidence level in PPE; adequacy of knowledge regarding care of COVID-19 patients; and their capacity in answering questions asked by public regarding the disease. For perception of sufficiency of PPE in workplace, the respondent should mark one answer from the options yes, no, or don't know. The rest of the questions were assessed using a five-point Likert score (from 1 [very low] to 5 [very high]). The fourth section measured the degree of satisfaction towards performance of the Malaysia's police, Malaysia's civil service, Malaysia's healthcare system, World Health Organization (WHO), and Malaysia's government, with a scoring system of 0 to 10 used (zero signified the worst score, while 10 signified the best score).

Sample size calculation

The target sample size of participants was determined using the formula $n = [z^2 * p * (1 - p) / e^2] / [1 + (z^2 * p * (1 - p) / (e^2 * N))]$, in which $z = 1.96$ for a confidence level of 95%; $p =$ proportion (expressed as a decimal); $N =$ population size of HCWs in Sarawak General Hospital; $e =$ margin of error. $Z = 1.96$, $p = 0.5$, $N = 5328$, $e = 0.05$

For this cross-sectional study, researcher must examine at least 359 completed questionnaires from participants.

Statistical analysis

Data were analysed using IBM SPSS Statistics V.21. (IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.). Descriptive statistics were presented to describe the demographic profile of the respondents and other parameters. Independent sample t-test

Table I: Respondents' demographic characteristics and association with total GHQ-12 scores

Variables	N (%)	Total GHQ-12 Score	
		Mean score (SD)	p-value
Gender			
Male	160 (23.7)	16.98 (6.16)	0.017
Female	515 (76.3)	17.05 (5.17)	
Age (Years)			
21-30	309 (45.8)	17.50 (5.51)	0.212
31-40	238 (35.3)	16.97 (5.52)	
41-50	106 (15.7)	16.46 (4.69)	
51-60	22 (3.3)	13.86 (5.41)	
Ethnicity			
Malay	210 (31.1)	16.99 (5.08)	0.638
Chinese	180 (26.7)	18.20 (5.09)	
Sarawak native	239 (35.4)	16.31 (5.66)	
Others ^a	46 (6.8)	16.43 (6.26)	
Education level			
Primary/ Secondary education	110 (16.3)	15.29 (4.79)	0.274
Bachelor's degree or diploma	524 (77.6)	17.27 (5.41)	
Master's degree and above	41 (6.1)	18.61 (6.20)	
Marital status			
Single	255 (37.8)	17.44 (5.53)	0.093
Married	394 (58.4)	16.84 (5.24)	
Divorced/Separated/ Widowed	26 (3.9)	16.00 (6.78)	
Hypertension			
Yes	47 (7.0)	15.45 (4.32)	0.524
No	628 (93.0)	17.15 (5.48)	
Diabetes			
Yes	19 (2.8)	15.26 (6.67)	0.695
No	656 (97.2)	17.08 (5.38)	
Hyperlipidaemia			
Yes	43 (6.4)	17.65 (5.72)	0.091
No	632 (93.6)	16.99 (5.40)	
Asthma			
Yes	57 (8.4)	18.16 (6.45)	0.098
No	618 (91.6)	16.93 (5.31)	
History of COVID-19			
Yes	37 (5.5)	16.97 (6.46)	0.414
No	638 (94.5)	17.03 (5.36)	
Occupation			
Allied health care professional ^b	46 (6.8)	17.72 (6.99)	<0.001 [^]
Non patient-care occupation ^c	59 (8.7)	15.61 (5.17)	
Nurse/ Medical assistant	350 (51.9)	16.11 (4.86)	
Doctor	220 (32.6)	18.74 (5.54)	
Work place			
Administration	42 (6.2)	15.69 (5.90)	0.244
Operating theatre (major)	81 (12.0)	18.94 (4.90)	
Emergency department	50 (7.4)	17.88 (4.31)	
Hospital adult in-patient ward	363 (53.8)	16.75 (5.47)	
Hospital out-patient clinics	115 (17.0)	16.42 (5.40)	
Others ^d	24 (3.6)	18.38(6.12)	

SD means standard deviation

^a Indian, Sabahan, or other races not specified

^b Social workers, pharmacists, medical imaging technologists, physiotherapists, dietitians, audiologists and respiratory therapists

^c Administration, food services, maintenance and research

^d Endoscopy suites, daycare operating theatre, radiology department or other places not specified

[^] Post-hoc analysis was done for significant result to identify the association among subgroups. The outcome of analysis was mentioned in the "result" part.

and one-way Analysis of Variance were used to determine the association between potential predictor towards GHQ score. Then, a multivariate analysis using General Linear Model Analysis of Co-variances was used to assess the association between potential set of associated factors towards GHQ score. A p-value of less than 0.05 is considered statistically significant.

RESULTS

There were 685 responses to the survey. Ten were excluded in view of pre-existing psychiatric illness. The remaining 675 responses were further analysed. Table I shows the sociodemographic characteristics of the respondents and their association with total GHQ-12 scores. The largest percentage of respondents was women (76.3%), aged 20 to 30 years (45.8%), Sarawak native (35.4%), well educated (83.7%

Table II: Association between self-rated health status, PPE and knowledge during COVID-19 outbreak with total GHQ-12 scores

Variables	N(%)	GHQ-12	
		Mean score (SD)	p-value
Self-rated health status			
Good to excellent	515 (76.3)	16.51 (5.18)	<0.001
Fair	144 (21.3)	18.65 (5.06)	
Poor to very poor	16 (2.4)	19.25 (10.82)	
Perception towards sufficiency of PPE in workplace			
Yes	309 (45.8)	16.24 (4.86)	0.175
No	226 (33.5)	17.94 (6.07)	
Don't know	140 (20.7)	17.31 (5.25)	
Confidence level towards PPE in disease prevention			
Low to very low	40 (5.9)	20.65 (5.63)	<0.001
Moderate	318 (47.1)	17.25 (5.00)	
High to very high	317 (47.0)	16.35 (5.61)	
Degree of familiarity in using PPE			
Low to very low	37 (5.5)	20.41 (6.03)	0.001
Moderate	301 (44.6)	17.39 (5.14)	
High to very high	337 (49.9)	16.34 (5.44)	
Adequacy of knowledge regarding care for COVID-19 patients			
Low to very low	80 (11.9)	19.01 (5.82)	0.004
Moderate	354 (52.4)	17.35 (5.27)	
High to very high	241 (35.7)	15.90 (5.26)	
Capability in answering questions asked by public regarding the disease			
Low to very low	51 (7.6)	20.29 (6.29)	0.001
Moderate	378 (56.0)	16.85 (5.08)	
High to very high	246 (36.4)	16.63 (5.53)	

Note: Each of the question were analysed independently and the results were derived after control for sociodemographic data such as age, gender, ethnicity, education level, marital status, hypertension, hyperlipidaemia, asthma, diabetes, work place, occupation group, and history of diagnosed to have COVID-19 in the analysis

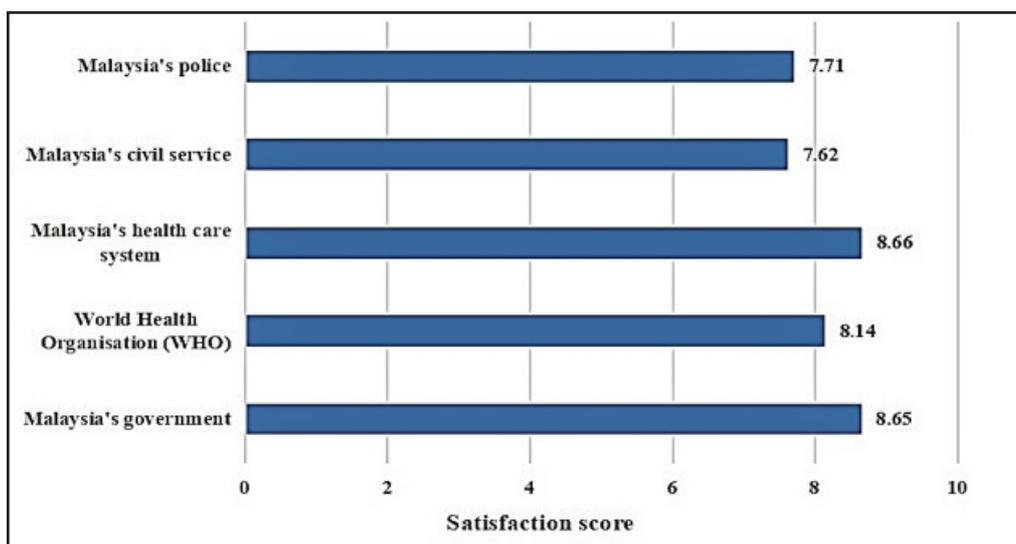


Fig. 1: Satisfaction score towards the efforts of each organisation in handling the COVID-19 outbreak.

≥ bachelor's degree or diploma), married (58.4%), without chronic illness (68.3%), without history of COVID-19 infection (94.5%), nurses or medical assistants (51.9%), and worked in the adult in-patient ward (53.8%). Almost all respondents reported full-time employment status (99.0%), and 71.0% (479/675) of them stated that they had worked 4 or more years in their current occupation.

Sociodemographic characteristics and total GHQ-12 score

The mean score for GHQ-12 among 675 respondents was 17.03 (SD 5.42). There was a statistically significant difference of the mean score for gender ($p=0.017$) and

different occupation group ($p<0.001$). Mean score was higher for female HCWs (17.05 SD 5.17), compared to male HCWs (16.98 SD 6.16). Doctors had the highest total GHQ-12 score among all HCWs, followed by allied healthcare professionals, nurses/medical assistants, and non-patient-care occupation workers. Post-hoc analysis showed that there is statistical significance between doctor vs. non-patient-care occupation workers ($p<0.001$) and doctor vs. nurses/medical assistants ($p<0.001$). The pairing of allied healthcare professionals and non-patient-care occupation workers also showed significant difference in mean score ($p=0.041$).

Self-rated health status, PPE, and knowledge influencing the total GHQ-12 score

The association between self-rated health status, PPE, and knowledge about the disease with the total GHQ-12 score is shown in Table II. There were 515 (76.3%) respondents who rated their health as good to excellent, 144 (21.3%) as fair, and 16 (2.4%) as poor. Less than half (45.8%) of the respondents perceived PPE as sufficient. A large majority of patients expressed moderate to very high confidence level towards PPE in disease prevention ($n=635$, 94.1%), familiarity using PPE ($n=638$, 94.5%), and capacity in answering questions asked by the public ($n=624$, 92.4%). Most expressed moderate to very high adequacy of knowledge regarding care for COVID-19 patients ($n=595$, 88.1%). The analysis indicated that a poorer self-rated health status was associated with a significant higher GHQ-12 score ($p<0.001$), whereas increasing confidence level ($p<0.001$) and degree of familiarity with PPE ($p=0.001$), increasing knowledge of care for COVID-19 patients ($p=0.004$), and higher capacity in answering questions regarding the disease ($p=0.001$) were significantly associated with a lower GHQ-12 score. Perception towards sufficiency of PPE in workplace did not significantly influence the score ($p=0.175$).

Satisfaction score in handling COVID-19

Satisfaction score towards the efforts of each organisation in handling the COVID-19 outbreak was rated on a scale of 0 to 10 by HCWs (Figure 1). Malaysia's healthcare system scored the highest (8.66), followed by Malaysia's government (8.65), WHO (8.14), Malaysia's police (7.7), and lastly Malaysia's civil services (7.62).

DISCUSSION

This study aimed to identify factors associated with psychosocial distress during the COVID-19 pandemic among HCWs. It assessed the perceived psycho-social impact of several factors (sociodemographic, workplace, health-related, perception-related, and knowledge-related) on HCWs of a tertiary hospital. The main characteristics of the respondents were of age ≤ 40 years (81.1%), female gender (76.3%), of education level at least a bachelor's degree or diploma (83.7%), married (58.4%), and without chronic illnesses (68.3%). Majority of the respondents (84.5%) were either nurses, medical assistants, or doctors. More than half (53.8%) of the respondents worked in adult in-patient wards, and 37 (5.5%) of them had previous diagnosis of COVID-19 infection.

This study identified female gender as one of the sociodemographic factors found to have significantly higher psychosocial impact from the pandemic. There are gender differences in expression of emotions in adults, with women showing greater emotional expression than men.¹⁸ During the pandemic, women were found to be at a higher risk of experiencing depression and anxiety.^{7,12,19} However, it is noteworthy to mention that female respondents were over-represented in most studies involving general teaching hospitals or tertiary care hospitals.²⁰ In our study, female participants represented 76.3% of the respondents, and thus, this observation may be biased by over-representation.

Our findings also identified doctors to have higher psychosocial impact from the pandemic. This is in contrary to the previous COVID-19 study in HCWs demonstrating that nurses had significantly higher levels of psychological distress compared to other HCWs.^{7,21} There were several plausible explanations. Firstly, women made up more than half (54.5%) of the 220 doctors who responded to the survey. Secondly, 74.5% of doctors who participated in the study were young adults (21–30-year age group). Majority of them were house officers or medical officers who were engaged as frontline workers providing direct care to COVID-19 patients. In addition, they were from the pool of contract HCWs who must work without job security or appreciation. As the pandemic continued, some of these doctors had been deployed to cope with staff shortage in certain high-risk units, and this created a high level of stress and anxiety as they were not adequately trained and prepared for such working circumstances. Thirdly, there was constant fear of contracting the virus; fear of infecting families, friends, and colleagues and fear of social isolation and stigmatisation when diagnosed with COVID-19. The ensuing allostatic overload occurs when the environmental challenges exceed individual abilities to cope, resulting in psychosocial impact and poor health outcomes.²² In addition, social media has been the platform where young adults interact and access information. The selective media coverage and overwhelming flow of negative information may perpetuate the sense of danger and uncertainty among them, resulting in a toll on their mental health.²³

The findings from this study showed significant association between the self-rated health status, confidence level towards PPE in disease prevention, degree of familiarity in using PPE, adequacy of knowledge regarding the care of COVID-19 patients, and capability in answering questions asked by the public regarding the disease with the degree of psychosocial impact. Fear of self-infection and of infecting family has been one of the main risk factors associated with stress and adverse mental health outcomes.^{7,9,21} The findings highlight the importance of infection control measures in reducing stress and anxiety among HCWs when vaccine and antiviral therapy were yet to be available for treatment. Numerous studies suggest the importance of PPE education and training to improve familiarity in usage and accurate timely update of COVID-19 information to HCWs, which were protective factors for mental outcomes during this pandemic.^{7,9,21}

Perception towards sufficiency of PPE in workplace was not significantly associated with the psychosocial impact in this study. PPE is any type of equipment or clothing worn by HCWs to protect them against transmission of the COVID-19 virus. The shortage of PPE poses a challenge in containment of any infectious disease and causes undue stress and anxiety among HCWs due to perceived risk of infection.^{7,9,21} Possible explanations for this finding were that at the time of this study, the COVID-19 pandemic in Malaysia was not as severe as in the rest of the world, and there had been daily briefing conducted by the Ministry of Health of Malaysia through social media platforms to provide real time updates, with HCWs often commended for the work and sacrifices that they had made.

The overall level of HCW satisfaction concerning organisational commitment and efforts to the COVID-19 pandemic was high, with a minimum score of 7 and above. There were several potential factors influencing the HCWs' sentiments during the pandemic. During the study period, Malaysia was at the flattened part of the epidemic curve, with low number of confirmed cases and death per million population. This has resulted in high expectation that the government policies in containment of pandemic were effective and the nation was progressing towards the return to normalcy. It is no surprise that the relevant stakeholders involved in the combat of pandemic, received uniformly high respondent ratings as HCWs understand the importance of multi-sector collaboration, at the local, national, and international level.

Our study does have limitations. Firstly, there may be a response bias due to the possibility that some non-respondents were either too stressed or not stressed at all to respond and, therefore, did not participate in this survey. Secondly, the study was conducted over 13 days and there was no longitudinal follow-up. Thirdly, the study was performed during the midst of the pandemic, where the survey may have missed the worst psychological distress among HCWs during the initial stages of the pandemic. Fourthly, self-reported responses may not correlate well with assessment by psychologist or psychiatrist. Finally, this study was of cross-sectional design with a convenience sample from a single tertiary care hospital in Malaysia, where the findings may not be representative of other hospitals or related clinical settings.

CONCLUSION

This study identified that doctors and female healthcare personnel have the highest risk of experiencing psychological distress during the COVID-19 pandemic. The risk factors associated with psychosocial impact among HCWs include self-rated health status, confidence level towards PPE in disease prevention, degree of familiarity in using PPE, adequacy of knowledge regarding care for COVID-19 patients, and capacity in answering questions asked by public regarding the disease. Strategies targeting the risk factors and early psychological support and intervention should be made available and accessible for all HCWs.

CONFLICT OF INTEREST

The authors have no conflicts of interest associated with the material presented in this paper.

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ETHICAL APPROVAL

Ethical approval for the project was obtained from Medical Research and Ethics Committee (MREC), Ministry of Health of Malaysia, prior to commencement of the study (NMRR-20-1271-55333).

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