

ORIGINAL ARTICLE

Trauma and Coping in Battling the COVID-19 Pandemic Among Malaysian Healthcare Workers

Norhafizah Mohd Noor¹, Ahmad Azuhairi Ariffin¹, Umi Adzlin Silim², Salmiah Md Said¹

¹ Department of Community Health, Faculty of Medicine and Health Sciences, University Putra Malaysia

² Department of Psychiatry, Serdang Hospital, Ministry of Health, Malaysia

ABSTRACT

Introduction: Prolonged COVID-19 pandemic with high morbidity and mortality may cause traumatic events to Healthcare Workers (HCW), resulting in Post-Traumatic Stress Disorder (PTSD) symptoms. Hence, this study aims to determine the prevalence of PTSD symptoms and its association with coping strategies among HCW in managing COVID-19 pandemic at Klang Valley Public Hospitals in Malaysia. **Methods:** A cross-sectional study with total of 424 eligible respondents were recruited through stratified random sampling. Data was collected from 6th May until 6th June 2021 using a self-administered online questionnaire adopted from MPCL-5 and Brief COPE instruments. IBM Statistical Package for Social Sciences Version 26 was used to analyse data. **Result:** 25% of the respondents demonstrated PTSD symptoms. Respondents who are single (aOR=3.319, 95% CI: 1.912, 5.762, p-value <0.001) and had history of positive COVID-19 (aOR= 2.563, 95% CI:1.058, 6.209, p-value=0.037) were more likely to experience PTSD symptoms. Frequently coping with self-blaming (aOR= 7.804, 95% CI: 3.467, 17.568, p-value < 0.001), behavioural disengagement (aOR= 7.262, 95% CI: 1.973, 26.723, p-value =0.003), humour (aOR= 5.303, 95% CI: 1.754, 16.039, p-value =0.003), venting emotion (aOR= 3.287, 95% CI: 1.521, 7.105, p-value =0.002) and less planning (aOR= 2.006, 95% CI:1.154, 3.487 p-value =0.014) are significant predictors for PTSD symptoms. **Conclusion:** One in four HCW managing COVID-19 in Klang Valley public hospitals experienced PTSD symptoms. Therefore, urgent interventional program targeting HCW who are single with history of positive COVID-19 is beneficial to prevent PTSD. Maladaptive coping strategies like self-blaming, venting emotion, humour and behavioural disengagement should be replaced with more adaptive coping strategies like planning, self-compassion, self-care and self-reflection.

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Corresponding Author:

Ahmad Azuhairi Ariffin, PhD
Email: zuhairifin@upm.edu.my
Tel: +603-97692422

INTRODUCTION

The World Health Organization (WHO) Emergency Committee had declared Corona Virus Disease-19 (COVID-19) as a Pandemic on 11th March 2020. In Malaysia, the first wave of the COVID-19 epidemic started on 25th January 2020 until 16th February 2020, with total cumulative of 22 confirmed COVID-19 cases. The second wave was from 27th February 2020 until 30th June 2020, with a cumulative total of confirmed COVID-19 cases of 8,354 and 121 deaths (1). The third wave cycle began on 8th September 2020. The number of confirmed COVID-19 cases in Malaysia had increased tremendously during the third wave of COVID-19 outbreak compared to the previous waves. As of 29th May 2021, Malaysia reported 479,666 total

cumulative COVID-19 cases, including 2,650 total deaths and 9,020 new cases (2).

The COVID-19 pandemic is classified as traumatic as the event is high magnitude, never been experienced before, involves high morbidity and mortality, and remains uncertain when the pandemic will end (3). The event can trigger PTSD symptoms, particularly among healthcare worker (HCW) managing COVID-19 cases. HCW with direct involvement that includes face to face interaction with COVID-19 patients was found to be significantly associated with PTSD symptoms as compared to those working indirectly with COVID-19 patients (4).

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria, PTSD consists of four clusters of symptoms. (i) The avoidance symptoms such as avoiding thought or feeling and external reminders that may trigger distressing memories. (ii) The intrusion symptoms

include recurrent nightmares, involuntary memories and flashback of traumatic events (iii) The alteration in cognition and mood symptoms are such as inability to remember important aspects of the traumatic events, negative and distorted thoughts, feeling detached, loss of interest, low mood, and so forth. (iv) The hyperarousal or hyperactivity symptoms include feeling easily startled and irritated, sudden anger outbursts, problems with concentrating and sleeping. These symptoms usually occurred following direct or indirect experiences of traumatic events such as sexual abuses, accidents, and life-threatening disasters like COVID-19 pandemic. To be diagnosed with PTSD, symptoms must last for more than a month and significantly cause psychosocial and occupational dysfunction (5).

The prevalence of PTSD symptoms among HCW managing COVID-19 pandemic ranges from 2.1% to 56.6% in the previous study (6–10). A study by Chew et al. (2020) during the 2nd wave of COVID-19 outbreak in Malaysia found the prevalence of PTSD among HCW was 6.6%. The highest prevalence of PTSD symptoms during COVID-19 Pandemic was in the European region, with the prevalence in Spain, was 56.6% and in Italy, 49.38%, in which study conducted during the peak of COVID-19 outbreak in both countries (7,8).

The previous study found that PTSD symptoms were associated with HCW who were single, among nurses, comorbid medical illness, less working experience and those working directly with positive COVID-19 patients in the COVID-19 ward (6,11). The primary concern of HCW managing COVID-19 is the risk of infection of COVID-19 and the spreading the virus to family members or colleagues (7,12). Other factors associated with PTSD symptoms are witnessing an increasing number of dead bodies, indirectly observing others' painful experiences, low social support and poor coping strategies (13).

The application of coping strategies is an important component in development of PTSD. A coping strategy is a set of actions or thought processes that are used to deal with stress or an unpleasant situation (14). Kasi et al. (2012) classified coping strategies in terms of adaptive and maladaptive coping. Adaptive coping is a coping strategy that results in good mental health outcomes whereas maladaptive coping is an unhelpful coping strategy that results in poor mental health outcomes (15). During the COVID-19 pandemic, HCW may experience various direct and indirect traumatic events after a continuous fight with prolonged COVID-19 pandemic. Exposure to prolonged stressful and traumatic events at the workplace would lead to stress, burnout, depression and post-traumatic stress disorder after failure of coping mechanisms (16,17). The majority of survivors have acute reactions, but these usually resolve without serious long-term repercussions (16). This is because most trauma survivors were able to respond with adaptive coping such as use of social support, active coping,

planning and religious coping to neutralise traumatic effects. Most of the survival will recover over time with minimal distress and be able to function effectively. The only small percentage of survival with history of trauma and maladaptive coping such as avoidance coping, denial, self-blaming, substance use and behavioural disengagement, may show progress to PTSD and others mood symptoms (16,17).

Although PTSD symptoms is well-recognised problems, little is known about the association between various types of coping mechanisms with PTSD symptoms among HCW managing COVID-19 pandemic. Such knowledge is important for the development of interventions program to improve and sustain psychological well-being of HCW during the COVID-19 pandemic. Besides, after one and half years of continuous battling with COVID-19 pandemic, the breaking point was when almost half of HCW managing COVID-19 in Malaysia suffered burnout and 11% experienced suicidal ideation (18,19). However, there are still limited studies done on PTSD symptoms among HCW managing COVID-19 in Malaysia. Therefore, this study aims to determine the prevalence of PTSD symptoms and its association between coping strategies among HCW managing the COVID-19 pandemic in Klang Valley Public Hospitals in Malaysia.

MATERIALS AND METHODS

Study Location and Design

This is a cross-sectional study which was conducted among HCW managing COVID-19 pandemic in eight public hospitals in Klang Valley, Malaysia. Klang Valley comprises the State of Selangor, Federal Territories of Kuala Lumpur and Putrajaya, and had recorded the highest cumulative cases of COVID-19 in Malaysia (2). All the study sites are public hospitals involved in treating COVID-19 patients.

Study Population

This study targeted all HCWs involved in the management of COVID-19 pandemic in Klang Valley public hospitals. The inclusion criteria were Malaysians, HCW who were directly (face to face) or indirectly (not face to face) involved in the management of COVID-19 patients. Five job categories were included which were (i) doctors, (ii) nurses, (iii) assistant medical officers, (iv) healthcare assistants and (v) medical laboratory personnel. The exclusion criteria were HCW with working experience less than three months and/or under treatment for mental illness. Before participating in the study, participants were asked about history of psychiatric illness. Those with previous history of psychiatric illness were excluded from this study.

Sample Size and Sampling Method

The sample size was calculated by using two independent proportion formulas by Lameshow et al.

(1991). The total sample size was 358. After adjusting for 10% ineligibility and 30% non-response rate for online survey, the total sample size required was 501 respondents.

The sampling frame was taken from respective department in each hospital after getting approval from each hospital director and head of department. The sample was selected by using proportionate stratified random sampling with job categories serve as strata. The strata consist of five job categories which were doctor, nurse, assistant medical officer, healthcare assistant and medical laboratory personnel. The number of samples needed in each stratum was calculated by the entire sample size divided by the total population in sampling frame times with the total numbers of HCW in each stratum (job category). The calculation for the number of samples needed in each stratum is shown below;

Number of samples needed each stratum in each hospital = $\frac{\text{Sample Size}}{\text{Total population in sampling frame}} \times \text{Sample in each stratum}$

The eligible respondent was selected using simple random sampling from each stratum. Each respondent in the sample population was assigned a number, which was then used to generate random numbers using the Microsoft Excel.

Data Collection Method

Data collection was conducted on 6th May 2021 until 6th June 2021. During this period, Malaysia faced the third wave of COVID-19 pandemic, which was tougher than the previous two waves (1). The surging number of confirmed COVID-19 cases from 3 cases per day on 30th June 2020 (end of the second wave) increased to 7,105 cases per day on 1st June 2021 (third wave)(20). The utilisations of patients bed at that time include repurposed bed in Klang Valley hospital was 85% (21). The Emergency (Essential Power) Ordinance 2021 was declared from 11th January 2021 to 1st August 2021, with the imposition of stricter movement control order in the states most severely affected were implemented to control COVID-19 pandemic (22). Before data collection started, a list of eligible healthcare workers was prepared. After getting permission from the Head of Department, an online questionnaire was sent to each eligible healthcare worker to participate in this study via email and WhatsApp.

Study Instruments

Malay Post Traumatic Stress Disorder Checklist for DSM-5 (MPCL-5) was used to assess PTSD symptoms. MPCL-5 is a self-reported questionnaire, validated and translated into Malay version by Bahari et al. (2019). The MPCL-5 has 17 items of questions consisting of a 5-point Likert scale from 1 (not at all), 2 (a little bit), 3 (moderately), 4 (quite a bit) and 5 (extremely). It measures all four symptom domains in PTSD according

to DSM-5 criteria. Total score ≥ 42 cumulative points indicate respondents having "PTSD Symptoms" and < 42 cumulative points indicating "No PTSD Symptoms". MPCL-5 with the cut-off point 42/43 was proposed for screening PTSD symptoms in the local population (23).

Malay Brief Coping Orientation of Problem Experienced (COPE) questionnaire was adopted to assess coping strategies among respondents. Brief-COPE is a self-reported questionnaire, validated and translated into Malay version by Yusoff et al. (2011)(24). The Malay Brief COPE consists of 28 items of questions and 14 domains of coping strategies (24). Each domain was measured using two items and reported in 4-points scale from 1 (I never do this), 2 (sometimes I do), 3 (usually I do), to 4 (I always do this). Total minimum score was 2 and maximum score was 8 for each domain. The score interpretation as below (25):

2.00 = haven't been doing this at all
2.01 to 4.00 = have been doing this a little bit,
4.01 to 6.00 = have been doing this a medium amount,
6.01 to 8.00 = have been doing this a lot

Coping strategies were classified into (i) adaptive and (ii) maladaptive coping (15,26). (i) Adaptive coping strategies include active coping, the use of emotional support, the use of instrumental support, positive reframing, planning, acceptance, and religion. (ii) Maladaptive coping includes self-distraction, denial, substance use, behavioural disengagement, venting emotion, humour and self-blame.

Validity and Reliability

Validity and reliability of questionnaire among study population were done before the study was conducted. A pretest study was conducted on 50 HCW managing COVID-19 outside the study location. The pre-test questionnaire of at least 12-50 people was recommended by Sheatsley and Sudman (1983). For face validity, the full set of questionnaires circulated among 50 HCWs to ensure the questions able to measure what intended to measure. The content of questionnaire was validated by three experts in the field. MPCL-5 demonstrated excellent internal consistency, with a Cronbach's Alpha value of 0.94. Brief COPE was found to have good internal consistency for adaptive and maladaptive coping as the total Cronbach's Alpha are 0.894 and 0.805, respectively.

Data Analysis

Data analysis was performed using IBM Statistical Package for Social Sciences Version 26. Normality testing was used for data distribution. Descriptive analyses were reported in frequency, percentage, the mean and standard deviation or median with inter-quartile range. Chi-Square or Fisher's Exact Test was conducted to establish the association between the variables. Multiple logistic regression was used to determine the predictors of PTSD symptoms. All tests of significance based on

p-value < 0.05 level and confidence interval of 95% were applied.

Ethical Consideration

Before distribution of the questionnaire, the study was registered and approved by National Medical Research Register (NMRR) and Medical Research and Ethics Committee, Ministry of Health with ID number: NMRR-21-310-58783 (IIR). The participation was on voluntary basis. The questionnaire link incorporated the participant’s information sheet and the implied consent appeared on the first page of the link. Participants who were positive with the PTSD symptoms after the screening were informed via email and were provided with a referral letter to the psychiatry department at the nearest hospital. The confidentiality of the respondent’s information is protected.

RESULTS

Sociodemographic Characteristics of Respondents

A total number of 424 out of 501 eligible HCW agreed to participate in this study, representing an overall response rate of 84.6%. Table I shows the sociodemographic characteristics of respondents according to age, gender, marital status, educational level, ethnicity, comorbid medical illness, number of children, job category, working experience, involvement in COVID-19 and history of positive COVID-19. The most common age group of respondents was less than 40 years old (76.7%) with median age of 33 years old and interquartile range (IQR) 10. There were more females (85.8%) than males (14.2%). Many of the respondents are married (77.1%), possessed diploma and below (76.2%) and no comorbid medical illness (82.1%). Most of respondents were Malay (87.5%) followed by Chinese (3.8%), Indian (5.2%) and others (3.5%). About 47.6% of respondents had two and more children, 34.3% with no child and 18.2% had one child. By job category, most of the respondents were nurses (67.2%), followed by doctors (17.9%), assistant medical officers (9.2%), healthcare assistants (4%) and lab personnel (1.7%). Large respondents had working experience of five years and less (72.9%) with a median of nine years and IQR 31.5. There were 61.3% of respondents involved directly in managing COVID-19 patients and only 6.6% had history of positive COVID-19.

Prevalence of PTSD Symptoms

The prevalence of Post-Traumatic Stress Disorder (PTSD) symptoms among respondents are at 25% with cut of points 42 and above as demonstrated in Table II.

Association of Social Demographic and PTSD Symptoms

The Chi-Square or Fisher’s Exact Test was used to determine the association between PTSD symptoms and sociodemographic factors and coping strategies. Table III shows the association between PTSD symptoms and sociodemographic factors. There is a significant association between PTSD symptoms and age

Table I: Sociodemographic Characteristics of Respondents (N=424)

Characteristics	Respondents			
	Sociodemographic factors	Frequency (n)	Percentage (%)	Median (IQR)
Age Group (years)				33 (10)
Less than 40 years		325	76.7%	
40 years and above		99	23.3%	
Gender				
Male		60	14.2%	
Female		364	85.8%	
Marital status				
Single		97	22.9%	
Married		327	77.1%	
Education level				
≤ Diploma		323	76.2%	
≥ Degree		101	23.8%	
Ethnicity				
Malay		371	87.5%	
Chinese		16	3.8%	
Indian		22	5.2%	
Others		15	3.5%	
Comorbid medical illness				
Yes		76	17.9%	
No		348	82.1%	
No of Children				1(3)
None		145	34.2%	
One		77	18.2%	
Two and more		202	47.6%	
Job category				
Doctor		76	17.9%	
Nurse		285	67.2%	
Assistant medical officer		39	9.2%	
Healthcare assistant		17	4.0%	
Lab Personnel		7	1.7%	
Working experience				9 (31.5)
≤5 years		309	72.9%	
>5 years		115	27.1%	
Involvement in COVID-19				
Direct		260	61.3%	
Indirect		164	38.7%	
History of Positive COVID-19				
Yes		28	6.6%	
No		396	93.4%	

Table II: Prevalence of PTSD symptoms among HCW managing COVID-19 in public hospitals in Klang Valley (N=424)

PTSD Symptoms*	Frequency (n)	Percentage (%)
Yes	106	25%
No	318	75%
Total	424	100%

Note: *MPCL-5 used with total cut off points ≥ 42 for PTSD Symptoms (Yes)

($\chi^2=13.288$, $df=1$, $p<0.001$), marital status ($\chi^2=25.064$, $df=1$, $p<0.001$), educational level ($\chi^2=4.163$, $df=1$, $p=0.041$), ethnicity ($p= 0.007$), number of children ($\chi^2=15.863$, $df=2$, $p<0.001$), job category ($\chi^2= 10.033$,

Table III: Association Between PTSD Symptoms and Sociodemographic Factors(N=424)

Risk Factors	PTSD Symptoms		χ^2	df	p-value
	Yes n (%)	No n (%)			
Sociodemographic Factors					
Age Group (years)					
Less than 40 years	95(29.2%)	230(70.8%)	13.288	1	<0.001*
40 years and above	11(11.1%)	88(88.9%)			
Gender					
Male	17(28.3%)	43(71.7%)	0.414	1	0.520
Female	89(24.5%)	275(75.5%)			
Marital status					
Single	43(44.3%)	54 (55.7%)	25.064	1	<0.001*
Married	63(19.3%)	264 (80.7%)			
Education level					
≤ Diploma	77(22.6%)	250(77.4%)	4.163	1	0.041*
≥Degree	33(32.7%)	68(67.3%)			
Ethnicity					
Malay	83(22.4%)	288(77.6%)	0.007* (Fisher's Exact Test)		
Chinese	8(50.0%)	8(50.0%)			
Indian	10(45.5%)	12(54.5%)			
Others	5(33.3%)	10(66.7%)			
Comorbid medical illness					
No	87(25.0%)	261(75.0%)	0.000	1	1.000
Yes	19(25.0%)	57(75.0%)			
No of Children					
None	53(36.6%)	92(63.4%)	15.863	2	<0.001*
One	16(20.8%)	61(79.2%)			
2 and more	37(18.3%)	165(81.7%)			
Job category					
Doctor	27(35.5%)	49(64.5%)	10.033	4	0.038*
Nurse	63(22.1%)	222(77.9%)			
Assistant medical officer	13(33.3%)	26(66.7%)			
Healthcare assistant	3(17.6%)	14(82.4%)			
Lab Personnel	0(0%)	7(100%)			
Working experience					
≤5 years	44(38.3%)	71(61.7%)	22.267	1	<0.001*
>5 years	62(20.1%)	247(79.9%)			
Involvement in COVID-19					
Direct	74(28.5%)	186(71.5%)	4.296	1	0.038*
Indirect	32(19.5%)	132(80.5%)			
History of positive COVID 19					
Yes	11(39.3%)	17(60.7%)	3.263	1	0.071
No	95(24.0%)	301(76.0%)			

Note: χ^2 =chi square, df = degree of freedom, *Significant at p-value < 0.05

df=4, p= 0.038), working experience ($\chi^2=22.267$, df=1, p<0.001) and involvement in COVID-19 ($\chi^2= 4.296$, df=1, p= 0.038).

Association of Coping Strategies and PTSD Symptoms

Table IV shows the association between PTSD symptoms and coping strategies. All maladaptive coping are significantly associated with PTSD symptoms. Coping with self-distraction ($\chi^2=17.195$, df=1, p<0.001), denial ($\chi^2=13.714$, df=1, p<0.001), substance use (p=0.004), behavioural disengagement ($\chi^2=33.864$, df=1, p<0.001), venting of emotion ($\chi^2=21.554$, df=1, p<0.001), humour (p<0.001) and self-blame ($\chi^2=56.601$, df=1, p<0.001) are significantly associated with PTSD symptoms.

Predictors of PTSD Symptoms

Multiple Logistic Regression was performed to determine the predictors for PTSD symptoms among HCW managing COVID-19 in public hospitals in Klang Valley.

Table IV: Association Between PTSD Symptoms and Coping Strategies (N=424)

Risk Factors	PTSD Symptoms		χ^2	df	p-value
	Yes n (%)	No n (%)			
Adaptive Coping					
Active Coping					
Haven't done this a lot	58(23.7%)	187(76.3%)	0.545	1	0.461
Have done this a lot	48(26.8%)	131(73.2%)			
Use of emotional support					
Haven't done this a lot	75(23.7%)	242(76.3%)	1.204	1	0.272
Have done this a lot	31(29.0%)	76(71.0%)			
Use of instrumental support					
Haven't done this a lot	76(24.6%)	233(75.4%)	0.099	1	0.753
Have done this a lot	30(26.1%)	85(73.9%)			
Positive reframing					
Haven't done this a lot	64(28.6%)	160(71.4%)	3.230	1	0.072
Have done this a lot	42(21.0%)	158(79.0%)			
Planning					
Haven't done this a lot	66(28.0%)	170(72.0%)	2.479	1	0.114
Have done this a lot	40(21.3%)	148(78.7%)			
Acceptance					
Haven't done this a lot	52(23.4%)	170(76.6%)	0.618	1	0.432
Have done this a lot	54(26.7%)	148(73.3%)			
Religion					
Haven't done this a lot	27(33.3%)	54(66.7%)	3.708	1	0.054
Have done this a lot	79(23.0%)	264(77.0%)			
Maladaptive Coping					
Self-distraction					
Haven't done this a lot	65(20.1%)	258(79.9%)	17.195	1	<0.001*
Have done this a lot	41(40.6%)	60(59.4%)			
Denial					
Haven't done this a lot	94(23.3%)	310(76.7%)	13.714	1	<0.001*
Have done this a lot	12(60.0%)	8(40.0%)			
Substance Use					
Haven't done this a lot	101(24.2%)	317(75.8%)	0.004* (Fisher's Exact Test)		
Have done this a lot	5(83.3%)	1(16.7%)			
Behavioural Disengagement					
Haven't done this a lot	90(22.3%)	314(77.7%)	33.864	1	<0.001*
Have done this a lot	16(80.0%)	4(20.0%)			
Venting of emotion					
Haven't done this a lot	82(21.6%)	297(78.4%)	21.554	1	<0.001*
Have done this a lot	24(53.3%)	21(46.7%)			
Humour					
Haven't done this a lot	94(23.2%)	311(76.8%)	<0.001* (Fisher's Exact Test)		
Have done this a lot	12 (63.2%)	7(36.8%)			
Self-blame					
Haven't done this a lot	75(19.7%)	306(80.3%)	56.601	1	<0.001*
Have done this a lot	31(72.1%)	12(27.9%)			

Note: χ^2 =chi square, df = degree of freedom, *Significant at p-value < 0.05

There were 19 independent variables with a p-value <0.25 selected based on Simple Logistic Regression. All 19 variables were entered and tested using Multiple Logistic Regression with the Forward Wald method. The final model assumption was checked. The classification table presented an overall good percentage (81.6%). There was no multicollinearity in between the variables. Hosmer and Lemeshow test showed a p-value > 0.05 (p=0.293) indicating the model has a good fit for the

data. Cox and Snell R squared (0.225), Nagelkerke R squared (0.333). The model is able to significantly discriminate 78.5% of cases (ROC= 0.785, p<0.001).

Table V shows seven significant predictors for PTSD symptoms in the final model. The final model demonstrates respondents who are single are 3.3 times more likely to have PTSD symptoms as compared to married respondents (aOR=3.319, 95% CI: 1.912, 5.762, p-value <0.001). Respondents with a history of positive COVID-19 are 2.6 times more likely to have PTSD symptoms as compared to respondents who were never diagnosed with positive COVID-19 (aOR= 2.563, 95% CI:1.058, 6.209, p-value=0.037).

Among adaptive coping, respondents who are unable to adequately utilise planning as a coping strategy are 2 times more likely to have PTSD symptoms as compared to those who have done this a lot (aOR= 2.006, 95% CI:1.154, 3.487 p-value =0.014). Among maladaptive coping, self-blaming, behavioural disengagement, humour and venting emotion are significant predictors

for PTSD symptoms. Respondents who utilised a lot of self-blaming coping strategy are 7.8 times more likely to have PTSD symptoms as compared to those who haven't done this a lot (aOR= 7.804, 95% CI: 3.467, 17.568, p-value < 0.001). Respondents who utilised a lot of behavioural disengagement coping strategy are 7.3 times more likely to have PTSD symptoms as compared to those who haven't done this a lot (aOR= 7.262, 95% CI: 1.973, 26.723, p-value =0.003). Respondents who utilised a lot of humour coping strategy are 5.3 times more likely to have PTSD symptoms as compared to those who haven't done this a lot (aOR= 5.303, 95% CI: 1.754, 16.039, p-value =0.003). Respondents who utilised a lot of venting coping strategy are 3.3 times more likely to have PTSD symptoms as compared to those who haven't done this a lot (aOR= 3.287, 95% CI: 1.521, 7.105, p-value =0.002).

DISCUSSION

This study aims to determine the prevalence of PTSD symptoms and its association between coping strategies among HCW managing the COVID-19 pandemic in Klang Valley Public Hospitals in Malaysia. This study found that 25% of HCW managing COVID-19 having PTSD symptoms. The findings are almost similar with a prevalence of PTSD symptoms among HCW during COVID-19 outbreak using similar tool (PCL-5), which were 28.9% in Norway, 27.7% in Mexico and 22.5% in the United States of America (4,9,27). A more recent meta-analysis demonstrated 20% of HCW had PTSD symptoms after the coronavirus outbreak as compared with 10% of the general population (28). The earlier study on PTSD among HCW managing COVID-19 in the Asian Pacific region found a lower prevalence of PTSD among HCW in Malaysia with 6.3% (6). However, the study by Chew et al. (2020) used a different tool to measure PTSD (IES-R tool) and was done during 2nd wave of the COVID-19 outbreak in Malaysia from 29th April to 4th June 2020. Malaysia's situation remained manageable during the second wave of the COVID-19 outbreak, with 5,945 cumulative cases as of 29th April 2020 (29). However, during this study, COVID-19 cases had increased tremendously to 579,462 total cumulative cases as of 1st June 2021 (30).

This study also found that respondents who are single are more likely to have PTSD symptoms as compared to those who are married. This is similar to the study among HCW during SARS outbreak in Singapore and COVID-19 outbreak in Spain (7,31). PTSD symptoms are more common for HCWs who are single as compared to married HCWs. This is likely due to a lack of social support, especially from those closest to them. More often than not, a person suffering from PTSD symptoms always experiencing recurrent flashback, unable to relax, easily startle, difficulty in sleeping, low mood and so forth. Hence, they require emotional support and reassurance from their loved ones (32).

Table V: Predictors of PTSD Symptoms among HCW Managing COVID-19 in Public Hospitals in Klang Valley (N=424)

Variable	B	S.E	Wald	p-value	Adj. OR	95% CI	
						Lower	Upper
Constant	-2.535						
Marital status							
Married	Ref						
Single	1.200	0.281	18.184	<0.001*	3.319	1.912	5.762
History of Positive COVID-19							
No	Ref						
Yes	0.941	0.451	4.350	0.037*	2.563	1.058	6.209
Planning							
Have done this a lot	Ref						
Haven't done this a lot	0.696	0.282	6.082	0.014	2.006	1.154	3.487
Self-blame							
Haven't done this a lot	Ref						
Have done this a lot	2.055	0.414	24.627	<0.001*	7.804	3.467	17.568
Behavioural Disengagement							
Haven't done this a lot	Ref						
Have done this a lot	1.983	0.665	8.895	0.003*	7.262	1.973	26.723
Humour							
Haven't done this a lot	Ref						
Have done this a lot	1.668	0.565	8.731	0.003	5.303	1.754	16.039
Venting of emotion							
Haven't done this a lot	Ref						
Have done this a lot	1.190	0.393	9.155	0.002	3.287	1.521	7.105

Note: *Significant at p-value <0.05
 Forward Stepwise (Wald) was applied
 Hosmer and Lemeshow test (p=0.293), classification table (overall percentage: 81.6%), Cox and Snell R squared (0.225)
 Nagelkerke R squared (0.333), ROC=0.785

The study found that HCWs who had history of positive COVID-19 are the significant predictors for PTSD symptoms. The result is similar to the study among Mexican and Iranian HCW (10,33). Maunder et al. (2003) highlighted that the psychological effect among HCW infected with SARS includes being afraid of infecting other family members and colleagues (34). Furthermore, we postulate that increased self-blaming can occur when infected HCWs are labelled as a super spreader, source of infection to their colleagues, and index case for hospital cluster. The situation is even worse if there is a death case among their close family members, colleagues and patients under their care (35). Therefore, HCW who had a history of positive COVID-19 should be monitored closely and screen for PTSD symptoms (36).

Adaptive and maladaptive coping are functional classifications for coping strategies. This study demonstrates that the frequent practising of maladaptive coping such as self-blame, behavioural disengagement, humour, venting emotion, and less planning are the significant predictors for PTSD symptoms among HCW managing COVID-19 pandemic. The findings are similar to the study among HCW during COVID-19 pandemic in South Africa and Saudi Arabia (17,26).

Self-blame is a maladaptive coping in which criticising or blaming oneself for events that occurred. Self-blame is found to be the most significant predictor in this study. The finding mirrors previous study on psychiatric comorbidities among HCW during pandemic in Singapore and Saudi Arabia (26,37). Self-blame may reflect an underlying sense of guilt and frustration in regards to interpersonal responses and responsibility attribution and eventually contributing to mental illness (38). In the context of COVID-19 pandemic, the feeling of under pressure and self-blaming such as "I am useless" because of the inability of saving other lives are the common reactions among HCW. Therefore, HCW should be encouraged to cope with self-compassion as an antidote to self-blaming, be kind to yourself and believe that you are worthy in whatever situations you may be going through.

Behavioural disengagement is another predictor for PTSD symptoms among HCW managing COVID-19. The findings are similar to previous study among HCW in Saudi Arabia (39). Behavioural disengagement is a coping style that reflects an individual's tendency to concede defeat or reduce their efforts and engagement in difficult situations. Prolong stressor exposure, feeling of uncertainty during COVID-19 pandemic, heavy workload, long working hours, challenges in work-family balance and stretched workplace relationships were reported as the commonest stressors among HCW managing COVID-19 leading to burnout and behavioural disengagement in the workplace (18). Therefore, the organisation may require to allocate

a specific time for self-care and connection for HCW managing COVID-19 by providing virtual support, virtual gathering for continuous medical education, journal clubs, mindfulness and team-building exercise in promoting work engagement.

Interestingly, this study found that humour is a significant predictor of PTSD symptoms. This is similar to study among nurses managing COVID-19 pandemic in South Africa (17). In contrast, many studies also found that humour is considered an adaptive coping mechanism and protective factor for mental illness (26,40,41). Martin et al. (2003) discovered that not all types of humour are stress-relieving. A sense of humour may also contain harmful components. Martin et al. (2003) proposed four humour components. Both affiliative and self-enhancing humours are considered benign coping strategies. In contrast, aggressive and self-defeating humours are considered as detrimental coping styles (42). It can be postulated that in dealing with COVID-19 pandemic, maladaptive humour such as making fun of the situation, humour as a way criticising, teased someone mistakes during meeting or ward rounds, can be traumatising and leads to the increase of the risk of suffering from PTSD symptoms. Hence, HCW should practice humour with caution and being mindful and sensitive to the situation they come across.

Excitingly, this study found that frequently used venting emotions are more likely to experience PTSD symptoms. The result is similar to the study by Colville et al. (2017) that demonstrates that frequently venting emotion is more likely to inflict PTSD symptoms among ICU staff (43). During the COVID-19 pandemic, venting emotion to colleagues or supervisors can be harmful if they are not listening, replying with quick advice-giving, minimising other problems, judgmental and frequent criticism. Therefore, HCW should acquire listening skills, know how to react, and support each other during the pandemic.

Among the adaptive coping, less planning is a significant predictor for PTSD symptoms. A similar finding was found in the study by Sim et al. (2010) and Alosaimi et al. (2018) in which planning becomes protective factor for PTSD symptoms. During an emergency, many things have to be performed speedily and it may outrun planning and mitigation measures. Therefore, HCW should be encouraged to practice active planning and time management as to maintain good mental health during the COVID-19 pandemic.

This study provides an understanding of coping strategies and PTSD symptoms among HCW managing COVID-19. According to the best knowledge, this is the first study on PTSD among HCW during peak of COVID-19 outbreak in Malaysia. The study findings can be used as baseline data in the improvement of the existing guidelines. It can provide crucial information on the high-risk group

and adapting intervention approaches in managing PTSD among HCW.

This study is not without limitations. Naturally a cross-sectional study is unable to determine the causal relationship between PTSD symptoms and the risk factors. This study can be generalisable to the healthcare workers population in public hospitals in Klang Valley only. As it was a self-administered online questionnaire, the author is aware of its length and time that could demotivate the respondents in responding. Thus, there was a limit imposed on the number of questions to be asked in work-related factors such as shift system, lack of personal protective equipment (PPE) supervision, lack of training and so forth.

Given the relatively large proportion of HCW with PTSD symptoms, exploring other individual differences such as exposure to major life events such as personal as well as professional life within the past six months is important for informing our understanding of PTSD etiology and early intervention in this sample.

This study found that one in four HCW managing COVID-19 experienced PTSD symptoms. Therefore, concerted efforts are required to establish PTSD screening, health promotional on psychosocial support services and immediate organisational intervention programs, by targeting HCW who are single with a history of positive COVID-19. Apart from providing Mental Health Psychosocial Support Services (MHPSS), the provider should put more emphasis on providing adaptive coping skills to HCW, such as self-compassion, self-care, self-reflection, providing emotional support to each other, self-management skills for planning, and time management. In addition, more emphasis should be given to discourage the use of maladaptive coping strategies associated with PTSD symptoms such as self-blaming, venting emotion, less planning, humour, and behavioural disengagement among HCW managing COVID-19.

We attempted to refer HCW with PTSD symptoms to counsellor or psychiatrist for further management. However, only 2.8% of them agreed to seek mental health professional help. This proportion appears grossly insufficient since 25% of HCW reported experiencing PTSD symptoms. Probably, respondents with PTSD symptoms would prefer to seek help from co-workers, family members or other informal help as reported 71.1% of them had received high co-workers support. Similar to Sacheva et al. (2021) and She et al., (2021) found only 10% and 12.7% of HCW managing COVID-19 agreed to seek professional help (44,45). The authors state the reason for low mental health help-seeking behaviour are lack of motivation, perceive mental health issues were not the priority, stigma associated with psychiatric treatment, lack of time to seek help and shortage of psychologists. Therefore, further study is needed to

explore mental health help-seeking behaviour among HCW in Malaysia for better understanding.

It is hoped that future studies will be able to conduct a prospective cohort study to determine causal relationship between work-related PTSD. Besides, future study may include work-related factors such as shift system, lack of personal protective equipment (PPE) supervision, lack of training, workload, social support and so forth for comprehensive stress-coping framework. A larger sampling population that includes HCW managing COVID-19 in Malaysia would be required to represent the substantial prevalence of PTSD among HCW in Malaysia.

CONCLUSION

One in four HCW managing COVID-19 in Klang Valley public hospitals experienced PTSD symptoms. HCW who is single, with a history of positive COVID-19 and frequently using maladaptive coping such as self-blaming, venting emotion, less planning, humour, and behavioural disengagement are the significant predictors of PTSD symptoms. Therefore, urgent psychosocial support and interventional program among HCW who are single and with history of positive COVID-19 are beneficial to address PTSD. Psychosocial support by providing more emphasis in adaptive coping strategies such as self-compassion, self-care, self-reflection, providing emotional support, self-management skills, planning and time management are important for the prevention of PTSD symptoms among HCW managing COVID-19 pandemic.

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