ORIGINAL ARTICLE

Fear of Covid-19 and Burnout Among Healthcare Providers in Malaysia: Is Resilience a Missing Link?

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ABSTRACT

Introduction: During the COVID-19 pandemic, healthcare providers have been in great fear due to the high risk of contracting COVID-19 infection at any time. This study aimed to determine the mediating role of resilience on the relationship between fear of COVID-19 and burnout in primary care healthcare providers in Malaysia. **Methods:** This was an online cross-sectional study involving 1280 healthcare providers aged 18 years and older from 30 government primary care clinics in Malaysia. We used the COVID-19 Fear Scale, the Copenhagen Burnout Inventory Scale, and the Short Brief Resilience Scale to collect data from the respondents. Smart-PLS was used to perform mediation analysis. **Results:** The mean age of the respondents was 36 years old and mean duration of working experience was 11 years. The majority of the respondents were female (82.4%) and Malays (82.3%). The study population consisted of nurses (47.4%), doctors (26%), medical assistants (11.9), healthcare assistant (7.1%), medical laboratory technicians (6.4%) and drivers(1.3).The results show that fear of COVID-19 positively predicts burnout. According to the results, resilience mediates the relationship between fear of COVID-19 and all the three burnout domains, namely personal burnout ($\beta=0.175, p<0.001$), work-related burnout ($\beta=0.175, p<0.001$) and client-related burnout ($\beta=0.172, p<0.001$). Additionally, resilience reduces the impact of COVID-19 fear on the three domains of burnout. **Conclusion:** Our study has reported a mediating effect of resilience on the relationship between fear of COVID-19 and burnout.
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Keywords: Fear, Burnout, Resilience, COVID-19, Mediation

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INTRODUCTION

Fear of COVID-19 is defined as a reaction when someone is in danger or when he or she is afraid of something. During this COVID-19 pandemic, fears could be attributed to a high contagion rate and the complications of COVID-19. In the United States, 97.8% of HCP deaths during the pandemic were confirmed COVID-19 cases and 2.2% were probable cases compared with non-HCP deaths (1). Another reason for fear of COVID-19 among HCPs was due to the uncertainties about the overall

extent of disease transmission, duration, and impact of the pandemic. They were worried and concerned about possible infection and subsequently infected their family members or being asymptomatic carriers.

Burnout among healthcare providers (HCPs) is an enormously challenging task in light of the global COVID-19 pandemic. Burnout is defined as a physical, emotional, and mental exhaustion, a condition resulting from a long-term commitment to an emotionally driven job. Kristensen et al. shows that the essence of burnout is fatigue and exhaustion affecting three circumstances, namely personal, work-related or client-related (2). It has tremendous negative effects on individuals, Leading to mental and physical health problems(3).

Resilience is defined as individuals with good psychological flexibility and quick recovery from difficult situations (4). Several studies examine the relationship between fear of COVID-19 and resilience. A study conducted among Chinese overseas students reported that fear of COVID-19 was negatively correlated with resilience (r =- 0.37, p < 0.001)(5). During the pandemic situation, fear of COVID-19 infection appears to be an aggravation of psychological distress and has been found to be associated with adverse outcomes(6). Resilience is an important protective factor to prevent healthcare providers from burnout during difficult times. There were conflicting results from two studies in Portugal that examined the relationship between resilience and personal burnout. A study conducted among HCPs of different disciplines in Portugal reported that resilience is negatively associated with personal burnout, (β = -0.08; p < 0.001)(7). However, another study conducted among primary care physicians does not report similar results(8). Regarding work-related burnout, one of the studies reported that resilience is a significant predictor of work-related burnout. HCPs from different disciplines in Portugal who demonstrate resilience have a lower risk of developing work-related burnout (β = -0.05; p < 0.01) (7). For client-related burnout, two studies in Portugal reported conflicting results on the association between resilience and burnout. A study conducted among HCPs from different disciplines reported that resilience is negatively associated with client-related burnout (β= -0.07; p < 0.01)(7). However, the results of another study conducted among primary care physicians showed different results(8).

In Malaysia, during the movement control order or lockdown, in addition to the normal operation of the clinic and taking care of the normal family chaos, the HCPs have to adapt to the new clinic set-up, the frequently changing COVID management protocols, and also carry out the newly launched national COVID-19 vaccination programme (9). The primary care HCPs have to manage the COVID-19 assessment centre, implement COVID-19 vaccination programme and indeed the additional responsibilities put more pressure on the primary care HCPs. Therefore, it is important to conduct a study examining mental health issues in primary care, especially in the state of Selangor, which has been hardest hit by COVID-19 (10).

It is not known whether resilience can affect the fear level and prevent the development of burnout as there have been many studies on mental illness but fewer studies on the mediator. The aim of this study was to examine the mediating role of mental resilience in the relationship between fear of COVID-19 and burnout in healthcare providers. This would help to develop an intervention programme to prevent burnout among healthcare providers in the future.

We proposed that the conceptual framework of this study be based on the stimulus-organism-response (11). The theory consists of three constructs namely stimulus, organism and behavioural response. In our study, fear of COVID-19 serves as the independent factor (stimulus), resilience as the mediator (organism) to face fear during a pandemic, while burnout is the dependent factor (response) in primary care providers. The dependent factor, burnout includes three subdomains, personal burnout, work-related burnout and client-related burnout. The hypothetical model of the research is presented in Fig. 1.
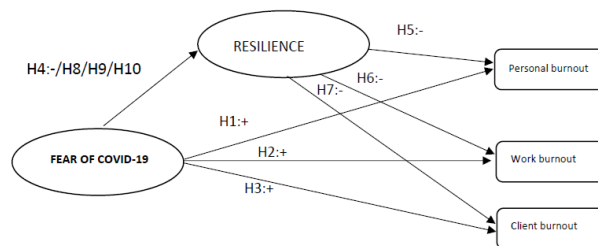

Fig 1: Research model

We postulate the following hypotheses based on the above discussion.

H1:   Fear has a positive effect on personal burnout of primary care providers

H2:   Fear has a positive effect on work-related burnout of primary care providers

H3:   Fear has a positive effect on client related burnout of primary care providers

H4:   Fear has a negative effect on resilience among primary care providers

H5:   Resilience has a negative effect on personal related burnout

H6:   Resilience has a negative effect on work- related burnout

H7:   Resilience has a negative effect on patient- related burnout

H8:   Resilience has a mediator role on the relationship between fear of COVID-19 and personal burnout

H9:   Resilience has a mediator role on the relationship between fear of COVID-19 and work-related burnout

H10:   Resilience has a mediator role on the relationship

between fear of COVID-19 and client related burnout

MATERIALS AND METHODS

Study design and setting
This was a cross-sectional study targeting to healthcare providers working in Selangor, Malaysia. The data collection period was January 28, 2022 to February 28, 2022. The inclusion criteria are explained below.

Study population
All HCPs aged 18 years and older who worked for at least one month were eligible for this study. The HCPs in this study consisted of doctors, nurses, medical assistants, medical laboratory technicians, driver or healthcare assistants.

Sample size calculation
Based on G*Power, given the number of 74 observed variables and 4 latent variables, the expected effect size of 0.02, and the desired probability set at a p-value of 0.05 and a statistical power of 80 percent, the calculated sample size required to detect the indicated effect and to infer the structural complexity of the model is 776. The final calculated sample size after accounting a dropout rate of 30% was 1108.

Data collection
We randomly selected 30 government primary care clinics from 52 primary care clinics in the region and data was collected from respondents via an online survey on the Google Forms platform.

Instruments
The Fear of COVID-19 scale (FCV-19S) was used to assess the level of fear of COVID-19. The Malay version of FCV-19S showed good internal consistency with a Cronbach's alpha of 0.893 (12). Brief Resilience Scale (BRS) was used assess the mental resilience. The Malay version of BRS was validated locally with good reliability (13). Copenhagen Burnout Inventory (CBI) was used to assess burnout. Burnout was defined when the average score of CBI≥ 50 for personal, work-related and client related subscales. The Malay version of the CBI has a good reliability as the Cronbach's alpha was 0.85 for personal burnout, 0.87 for work-related burnout and 0.83 for client-related burnout (14).

Statistical analysis
We used Smart-PLS 3.3 to do analysis. was used to determine the mediator in this study (14). The Partial Least Square-Structural Equation Modeling (PLS-SEM) was used to determine the association between the measured construct and burnout among healthcare providers. PLS consists of two phases, with the first phase involving the assessment of the measurement model, followed by the structural model. Mediation analysis based on the indirect effect bias-corrected bootstrapping method was used in this study in view of

this methos has a better power, lesser Type 1 error, and more information about the magnitude of the mediation effect (15).

Ethic approval
Ethics approvals has been obtained from the Medical Research Ethics Committee, Malaysia Ministry of Health (NMRR-21-20084) prior data collection.

RESULTS

Table I shows the socio-demographic data of the study respondents. The mean age of the respondents was 36 years old and mean duration of working experience was 11 years. Majority of the respondents were female (82.4%) and Malays (82.3%). The study population consisted of nurses (47.4%), doctors (26%), medical assistants (11.9), healthcare assistants (7.1%), medical laboratory technicians (6.4%) and drivers (1.3).

Table II shows the reliability of the internal consistency, the convergent validity, and the model discriminant validity in the measurement model. Five items were deleted due to low factor loading (<0.5) namely BRS 5, CBI 13, CBI 17, CBI 18 and CBI19. The composite reliability (CR) of the internal consistency was deemed to be satisfactory as the score exceeded the threshold of 0.7, ranging from 0.843 to 0.951. The convergent reliability was met as average variance extracted score for each construct was then examined and all were reported to be greater than 0.50. The discriminant validity was met as it fulfilled cross loading and heterotrait-motrait (HTMT) criteria. The factor loading for other remaining items ranged from 0.579 to 0.933 with p-value<0.05. Thus, a total of 28 items were remaining in the measurement model. According to Hanseler 2015, the HTMT values should be 0.85-0.90(15). In this study, the values of HTMT were all lower than the stringent criterion of ≤ 0.90 except one construct showed the value of 0.904. Following that, we then performed HTMT bootstrapping, and the upper limit of the confident interval was less than 1. Thus, the discriminant validity was established between constructs in this study (Table III).

In the structural model, the collinearity test was measured using the variance inflation factor. The results value were less than the recommended value of 5 indicates no correlations between two formative indicators (16). In addition, the common method bias was assessed by comparing the R-square (R2) before and after adding unmeasured marker variables into the model. The R2 with measured marker showed less than 10% difference from the original model, hence showing that our dataset was free of common method bias (17).

The direct and indirect effect of the hypothesis via bootstrapping with resampling. We tested the effect of fear on three domains of burnout. Our result showed that fear was positively related to personal burnout (β

Table I: Socio-demographic and clinical characteristic of the study respondents (n= 1280)

Variables		N	%	Mean ± SD
Age				36±7
Gender				
Female		1055	82.4	
Male		225	17.6	
Race				
Malays		1053	82.3	
Chinese		43	3.4	
Indian		118	9.2	
Others		66	5.2	
Occupation				
Doctors		332	25.9	
Nurses		607	47.4	
Medical assistant		152	11.9	
MLT		82	6.4	
Drivers		17	1.3	
Healthcare assistant		90	7.0	
Education				
Secondary school		204	15.9	
Diploma		620	48.4	
University		315	24.6	
Master and above		141	11.0	
Years in service				11±6
Attachment place				
Health clinic		736	57.5	
COVID assessment centre		10	0.8	
Quarantine centre		7	0.5	
Vaccination centre		1	0.1	
COVID sampling centre		1	0.1	
more than one attachment		521	40.7	
others (hospital)		4	0.3	
Medical illness				
Good health		1020	79.7	
Has medical illness		260	20.3	
Stay with family	No	267	20.9	
	Yes	1013	79.1	
Infected family member	No	892	69.7	
	Yes	388	30.3	
Infected with COVID-19	No	1001	78.2	
	Yes	279	21.8	
Quarantine frequency				2±2
Worry COVID-19 mortality	No	180	14.1	
	Yes	1100	85.9	
Worry yourself at workplace	No	40	3.1	
	Yes	1240	96.9	
Where to seek for help	No	155	12.1	
	Yes	1125	87.9	
Life insurance	No	600	46.9	
	Yes	680	53.1	

Table II: Reliability and convergent validity of the measurement model

First order constructs	Items	Loading	CR	AVE
Resilience	Brief resilience Scale Q1	0.628	0.843	0.520
	Brief resilience Scale Q2	0.738		
	Brief resilience Scale Q3	0.620		
	Brief resilience Scale Q4	0.789		
	Brief resilience Scale Q6	0.809		
Personal burnout	CBI1	0.837	0.931	0.695
	CBI2	0.857		
	CBI3	0.867		
	CBI4	0.805		
	CBI5	0.892		
	CBI6	0.732		
Work-related burnout	CBI7	0.859	0.951	0.765
	CBI8	0.890		
	CBI9	0.827		
	CBI10	0.889		
	CBI11	0.894		
	CBI12	0.888		
Client-related burnout	CBI14	0.897	0.934	0.826
	CBI15	0.933		
	CBI16	0.896		
Fear	Fear Q1	0.579	0.903	0.576
	Fear Q2	0.700		
	Fear Q3	0.786		
	Fear Q4	0.660		
	Fear Q5	0.830		
	Fear Q6	0.845		
	Fear Q7	0.866		

Deleted BRS Q5, work-related burnout Q13, client-related burnout Q17, Q18 and Q19; CR: composite reliability; AVE: average variance extracted

Table III: Discriminant validity based on heterotrait-motrait (HTMT)

Variables	1	2	3	4	5
1.Client related burnout					
2.Fear	0.234				
3.Personal burnout	0.688	0.384			
4.Resilience	0.548	0.451	0.602		
5.Work related burnout	0.779	0.314	0.904	0.583	

= 0.186, p< 0.001), positively related to work-related burnout (β =0.123, p< 0.001) and positively related to client- related burnout (β =0.059, p=0.028). Therefore, H1-H3 were supported with the results in examining the relationship between fear and burnout.

Our finding showed that fear was negatively associated with resilience (β =- 0.404, p< 0.01). Thus, H4 was

supported. Next, we tested the effect of resilience on burnout. Results showed that resilience was negatively associated with personal burnout (β = -0.433, p< 0.001), work-related burnout (β =- 0.444, p< 0.001) and client-related burnout (β =- 0.426, p< 0.001). So H5-H7 were all supported.

Table IV shows the results of mediation, fear -> resilience -> personal burnout (β = 0.175, p< 0.001), fear -> resilience -> work burnout (β = 0.179, p<0.001), fear -> resilience -> client burnout (β = 0.172, p< 0.001). The 95% corrected bias of the confidence intervals also showed no intervals spanning 0, confirming our results. Thus, we can conclude that the mediating effect of resilience on the relationship between fear of COVID-19 and burnout is statistically significant, and H8, H9 and H10 were also supported.

DISCUSSION

Our study showed that fear was positively associated with personal, work-related and client-related burnout among HCPs. This is consistent with a recent study finding that COVID-19 has created a sense of job insecurity among frontline restaurant workers, leading to emotional burnout (18). According to the Hobfoll's Conservation of Resources model, people experiencing stress may exhibit fear as one of the cognitive or emotional responses, leading to mental health problems in the short term and burnout in the long term (19). The burnout syndrome among HCPs involved in the treatment of COVID-19 could be explained by Hobfoll's Conservation of Resources (COR) theory (19). According to the theory, constant exposure to high levels of fear from COVID-19, can disrupt HCPs' homeostasis and develop a maladaptive coping mechanism that leads to long-term burnout. HCPs who have treated COVID-19 patients may develop fear as COVID 19 has been known to pose a real threat causing life-threatening and health problems. This leads to an activation of the cycle of losses associated with burnout (19). This resource

conservation theory has been applied whenever the HCPs went into quarantine due to close contact with COVID-19 patients. The HCPs who were in quarantine were isolated and the HCPs felt distressed as they felt life was out of their control and threatened by the pandemic. Worst scenario was that the cycle needs to be repeated whenever they have close contact with COVID-19 patients. In other words, HCPs constantly suffer from feelings of fear due to loss of control over their lives, leading to the development of maladaptive coping mechanisms such as burnout (20). Furthermore, the quarantine of HCPs would cause a disruption in terms of manpower at the workplace. Subsequently, it leads to increase workload for the rest of the HCPs provider and creates a stressful working environment which contribute to burnout among HCPs. Thus job demands resource theory which hypothesizes that burnout is the result of an imbalance between the job demands and the resources in terms manpower has explain the above situation well (21). Hence, it confirm the hypothesis as show below: H1:Fear has a positive relationship on personal burnout, H2: Fear has a positive relationship on work-related burnout and H3:Fear has a positive relationship on client-related burnout.

Our study showed fear was negative related to resilience of the healthcare providers. This is consistent with previous studies findings (18). A study conducted among students in China reported that fear of COVID-19 level was negatively correlated with resilience level (r = 0.37, p < 0.001)(5). Another study conducted in Turkey also revealed that individuals with fear of COVID-19 were less likely to develop resilience(β = -0.068; p < 0.01) (22). Hence, it is confirming the hypothesis on H4:Fear has a negative relationship on resilience of primary HCPs. This means the higher the fear level associated with lower level of resilience.

Our study showed resilience was negative related to personal, work-related and client related burnout of the healthcare providers, which aligns with recent research

Table IV: Structural model of the study (n=1280)

Hypothesis	Relationship	Std. Beta	Std. Dev	t-value	P-values	BCI LL	BCI UL	F2
H1	Fear -> Personal burnout	0.186	0.027	6.81	<0.001	0.140	0.231	0.040
H2	Fear -> Work burnout	0.123	0.028	4.371	<0.001	0.078	0.171	0.017
H3	Fear -> Client burnout	0.059	0.031	1.906	0.028	0.009	0.111	0.004
H4	Fear -> Resilience	-0.404	0.024	16.803	<0.001	-0.442	-0.363	0.195
H5	Resilience -> Personal burnout	-0.433	0.025	17.063	<0.001	-0.474	-0.389	0.220
H6	Resilience -> Work burnout	-0.444	0.026	16.964	<0.001	-0.485	-0.399	0.221
H7	Resilience -> Client burnout	-0.426	0.028	15.269	<0.001	-0.471	-0.379	0.191
Mediation effect								
Hypothesis	Relationship	Std. Beta	Std. Dev	t-value	P-values	BCI LL	BCI UL	
H8	Fear -> Resilience -> Personal burnout	0.175	0.015	11.653	<0.001	0.147	0.205	
H9	Fear -> Resilience -> Work burnout	0.179	0.015	11.68	<0.001	0.150	0.209	
H10	Fear -> Resilience -> Client burnout	0.172	0.016	10.932	<0.001	0.142	0.203	

studies finding (7, 8). The possible explanation could lie in the fact that psychological resilience includes traits that include protective qualities as well as optimism or positive emotions that help to reduce the negative impacts of COVID-19(22). At the same time, resilience positively impacts on the healthcare providers to recover faster and respond more effectively to stressful situation such as COVID-19(23). This is consistent with the findings of literature (6-8, 24, 25). Recent research study among 1422 HCPs show that resilience has a negative association with burnout (6). Another study conducted by Zhang et al in Wuhan China among 180 nurses also reported that resilience has a negative association on burnout (24). Another study had been shown that physicians with good resilience were associated with a lower risk of burnout (25). Another study conducted among HCPs from different disciplines in Portugal reported that resilience was negatively associated with personal burnout, (β = -0.08; $p < 0.001$), work-related burnout (β = -0.05; $p < 0.01$) and client-related burnout (β = -0.07; $p < 0.01$)(7). Hence, it is confirming on the hypothesis below: H5:Resilience has a negative relationship on personal related burnout, H6:Resilience has a negative relationship on work- related burnout and H17:Resilience has a negative relationship on client-related burnout.

Our study findings showed that there was a statistically significant mediating effect of resilience on the relationship between fear of COVID-19 and burnout among healthcare providers. To date, this is the first study to examine at the resilience as the mediator effect on the association between fear of COVID-19 and burnout. This situation is best explained by the Stimulus-Organism-Response (SOR) model. This can be explained by the Stimulus-Organism-Response (SOR) model, the stimulus (S) can be explained in such a way that sudden environmental changes like COVID-19 pandemic, can affect a person's emotional stability and development of fear (11).The organism (O) refers to the internal processes and structures that respond to fear and this organism usually mediates the association between stimulus and response (26). The response (R) is the consequence of the stimulus and organism. In this situation, the stimuli (S) is the fear of COVID-19, the organism (O), is low resilience, which further leads to the development of behavioural responses (R) in the form of burnout (11). Resilience could play an important mediating role in the association because of its nature. Resilient HCPs tend to think and react positively on the effect of fear to safeguard their mental well-being (27, 28). Resilience can also improve the impact of mindfulness (29) and in turn minimise the development of three burnout domains. This study is consistent with a conceptual model where resilience explains the link between worry towards COVID-19 and mental health(27). Hence, this study concludes that H8:Resilience mediate the association between fear and personal related burnout, H9:Resilience mediate

the association between fear and work related burnout and H10:Resilience mediate the association between fear and client burnout. Therefore, resilience could be an important mediator that interventions should target in order to improve HCPs' resilience, which would help reduce HCPs' risk of developing burnout.

One of the implications of the current study is to prevent the burnout through resilience training to help HCPs to cope with fear and other psychological effects due to COVID-19. A local study show that the burnout among HCPs in Sabah were 61.2% (personal burnout), 48.8% (work-related burnout) and 39.8% (client-related burnout)(30). These figures were slightly higher compare with the pre-pandemic period whereby the prevalence of burnout among HCPs in Sabah were 57.1% (personal burnout), 48.8% (work-related burnout) and 39.8% (client-related burnout) (31). Another local study in Sabah also reported that the prevalence of stress among medical student was high as 33% (32). Thus, a structure-programme for resilience is needed urgently to prevent the development of burnout. Literature reported that a brief resilience training focusing on mindfulness and coping strategies does help to alleviate psychological distress and improve mental health outcomes of HCPs (33). A recent systematic review and meta-analysis shows that resilience training programme based on mindfulness or cognitive behavioural therapy technique is effective to promote or enhance individual resilience (34). With the advancing of the technology and comtemporise use of online platform, e-health resilience training may come into the picture it does not require a physical contact and yet feasible, assessable and practical in the COVID-19 pandemic. The online course could be delivered in several short sessions via videos, hands-on practice sessions on exercise, small group discussions and experience sharing sessions to cover resilience, mentalization and self-compassion.

To the best of our knowledge, the current finding represents the first report on the mediating effect of resilience on fear and burnout. Second, this study has a big sample size of 1280. This is relatively large compared with other studies (24, 35). One of the studies was conducted by De Monte 2020 to determine burnout and resilience among 102 general practitioners in Italy (35), another study was conducted by Zhang et al among 180 nurses in Wuhan China (24). Similarly another study was conducted among 284 adults in Arab to determine mediating effect of resilience on the relationship of COVID-19 worry and development of mental health disorder(27). Furthermore, there are 30 clinics involved in this study. More clinics will give a better picture on burnout compared to a single clinic. A single clinic may give a bias result if the clinic is having too many patients or less workload. Furthermore, a randomisation method was applied when choosing 30 clinics from the 53 clinics initially.

The are some limitations in this study. First, the generalization of the study findings as the study was conducted in Selangor state only. Second, the causal and effect relationship also was not able to be established due to the cross-sectional design. The findings of this study were based on the respondents' self-reports and bias might occur. Thus, we have to interpret the results of this study cautiously within the context of its limitations.

CONCLUSION

Our study has shown that resilience plays a mediating role in the relationship between primary care providers' fear about COVID-19 and three domains of burnout. Policy makers and higher authorities from ministry of health would need to look for strategies to help HCPs to improve their resilience in order to protect them from getting burnout.

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