

Mental health problems and coping strategy among pulmonary resident physicians during the COVID-19 pandemic in a tertiary respiratory hospital in Indonesia: a serial cross-sectional study

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ABSTRACT

BACKGROUND Pulmonary resident physicians are part of the frontline workers for COVID-19 in the hospital and might require a suitable coping strategy to manage stress. Here, we described their mental health status and coping strategy during the COVID-19 pandemic.

METHODS A cohort study was done to evaluate stress, anxiety, depression, and coping strategies among pulmonary resident physicians in a tertiary referral hospital. Questionnaires were administered in 4 time points between August 2020 and June 2021. The DASS-21 questionnaire measured depression, anxiety, and stress, while Brief COPE instrument qualified the coping strategy.

RESULTS The total respondents who filled the questionnaire in 4 time points in August 2020, October 2020, February 2021, and June 2021 were 60, 93, 96, and 94 resident physicians with mean stress levels of 4.3, 6.1, 5.4, and 6.3, respectively. Depression, stress, and anxiety were less frequent during the study period, mostly mild or moderate. However, moderate anxiety slightly increased in June 2021 when the pandemic reached its peak. Most of them (95.8%) had effective coping strategies related to religious beliefs.

CONCLUSIONS Effective coping strategies might preserve the pulmonary resident physicians' mental health during the pandemic. Furthermore, the sociodemographic and cultural background might affect the coping strategy. Practicing religion and praying or meditating might be essential factors in coping with psychological distress and a key to adapt to the COVID-19 pandemic.

KEYWORDS coping strategy, COVID-19, medical residency, mental health

Since the coronavirus disease 2019 (COVID-19) pandemic in early 2020, physicians worldwide have faced significant changes in daily clinical practice. Among them, resident physicians working in the hospital also have a similar predicament. While scientific activities are modified to online teaching, the resident physicians, especially those in the pulmonology department, are assigned to treat COVID-19 patients.

In the early pandemic, many things about the disease were unknown. Dealing with uncertainty, changes, and deadly infectious diseases might result in distress and other mental health problems. A study in China found that anxiety and stress increased due to the pandemic.¹ The ongoing pandemic might become continuous stress which topples resident physicians' mental health. However, they still need to attend

to their duty and do other academic assignments to complete their studies. This mindset might become an even more stressor among them.

Coping strategies to adapt and manage stress are categorized into avoidant and approach coping responses. Avoidant coping is characterized by the subscales of denial, substance use, venting, behavioral disengagement, self-distraction, and self-blame. It is associated with unfavorable physical health among those with medical conditions. However, it is less effective for managing anxiety, compared with the approach coping response. Approach coping strategy is characterized by active coping, positive reframing, planning, acceptance, and seeking emotional and informational supports. It is associated with more helpful responses to adversity, including practical adaptive adjustment, better physical health outcomes, and more stable emotional responses.² The study on the mental health among resident physicians who treated COVID-19 patients in daily practice has yet to be done in Indonesia. This study aimed to describe the mental health status and coping strategy among pulmonology and respiratory medicine resident physicians during the pandemic.

METHODS

This cohort study observed the COVID-19 and mental health status among resident physicians from the Department of Pulmonology and Respiratory Medicine, Faculty of Medicine, Universitas Indonesia, working in Persahabatan National Respiratory Center Hospital, Jakarta, Indonesia, as one of the national COVID-19 referral hospitals. All the resident physicians were administered questionnaires regarding their stress, anxiety, depression, and coping strategies, as well as their worries, anxiety thoughts, and positive points during the COVID-19 pandemic.

The Depression, Anxiety and Stress Scale 21 (DASS-21) questionnaire was disseminated in four time points in August 2020, October 2020, February 2021, and June 2021, while the Brief Coping Orientation to Problems Experienced (Brief COPE) questionnaire was disseminated in February and June 2021. Additionally, in four time points, the participants were asked to rate their stress level on a scale of 10. Questionnaires on positive thoughts, worries, and anxiety thoughts were distributed in October 2020 and June 2021. We added publicly available data from the local government

regarding the number of COVID-19 cases in Jakarta during the period when the questionnaires were obtained, as illustrated in Figure 1.³

Depression, anxiety, and stress among the resident physicians were assessed using the DASS-21 questionnaire.⁴ Meanwhile, the coping strategy was quantified using the Brief COPE questionnaire,⁵ which had been validated in Indonesian.⁶ The Brief COPE questionnaire showed that the dominant approach coping strategy was the effective coping strategy, while the dominant avoidant coping strategy was considered ineffective. The stress level was measured on a scale of 10, with 0 being no stress and 10 being very stressful. Worries and positive points during the pandemic were assessed based on the listed statements, rated from 0 (not worried/never) to 10 (very worried/always). Meanwhile, anxiety thoughts were measured based on participants' choice between the two given statements.

The resident physicians included junior, senior, and chief residents who were in the 1st to 3rd semester, 4th to 5th semester, and 6th semester or more, respectively. The COVID-19 status among them was collected based on the nasopharyngeal swab test to detect severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which was routinely examined since the beginning of the pandemic. The data were collected voluntarily and anonymously, and descriptive analysis was analyzed using SPSS software version 22 (IBM Corp., USA). The Ethics Committee of the Faculty of Medicine Universitas Indonesia approved this study (No. KET-681/UN2.F1/ETIK/PPM.00.02/2020). This study complied with all regulations in Indonesia, and informed consent was obtained from all participants.

RESULTS

The total number of participants in August 2020, October 2020, February 2021, and June 2021 were 60, 93, 96, and 94, respectively. In February 2021, the participants consisted of 32 juniors, 39 seniors, and 25 chief residents. The respondents comprised 40 males and 56 females, with an average age of 32. Twenty-four respondents were single, and 72 respondents were married. Of 72 married resident physicians, 18 had no children, 30 had one child, and 24 had more than one child. The majority (76%) took a self-funded medical residency. The resident physicians who lived with their parents were 36.7%, with family (husband/

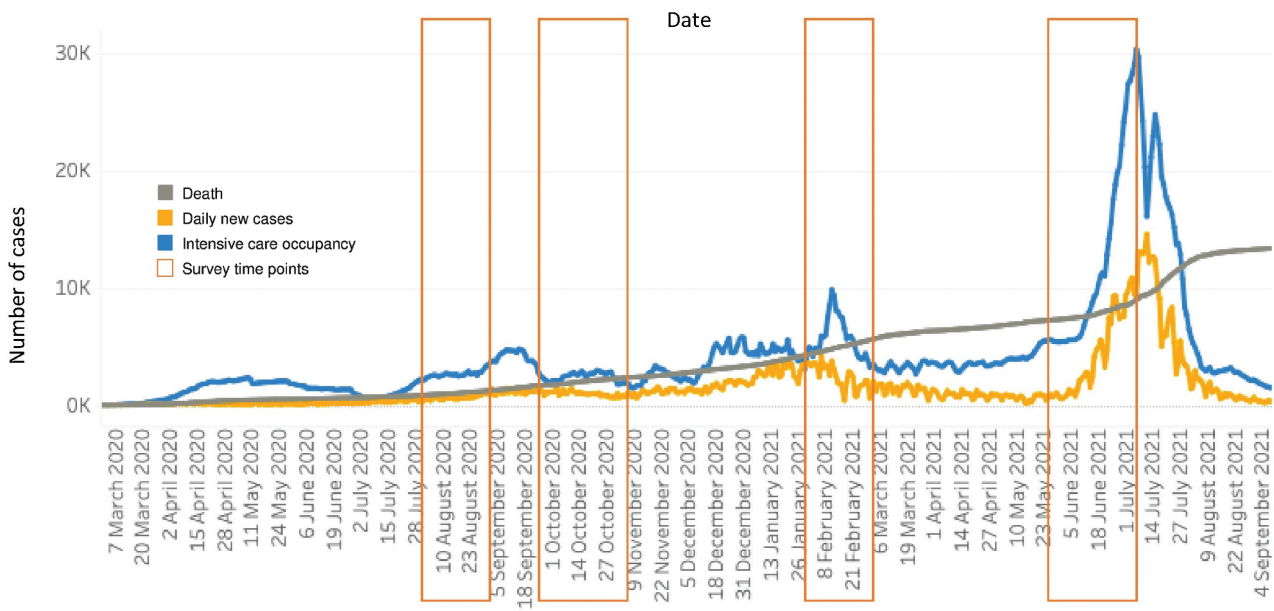


Figure 1. Coronavirus disease 2019 (COVID-19) pandemic situation in Jakarta when the questionnaires were obtained. Data and graph were taken from: <https://corona.jakarta.go.id/en/data-pemantauan>

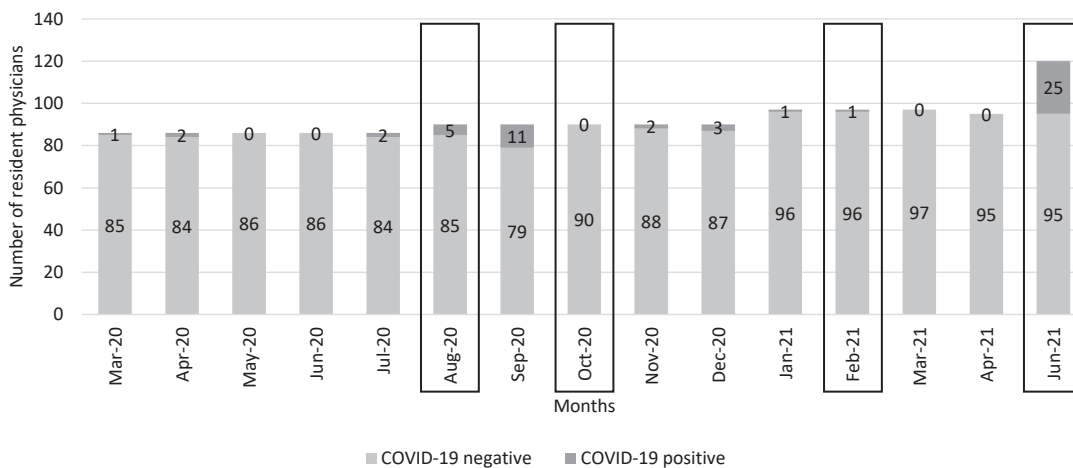


Figure 2. Coronavirus disease 2019 (COVID-19) status among the resident physicians when the questionnaires were distributed

wife/children) were 37.8%, and in boarding house were 25.5%. In June 2021, all resident physicians had been vaccinated; most of them had been fully vaccinated (2 doses) (93.6%), and only a few had one dose of vaccine (3.4%). The COVID-19 status among the resident physicians is shown in Figure 2. The highest frequency of COVID-19 positive cases was in June 2021 (20.8%), followed by September 2020 (12.2%).

The average stress levels among respondents in August 2020, October 2020, February 2021, and June 2021 were 4.3, 6.1, 5.4, and 6.3, respectively. The result of the DASS-21 questionnaire is shown in Table 1.

Of all 96 respondents who filled out the Brief COPE questionnaire in February 2021, 95.8% had an effective coping strategy, and only one had an ineffective coping strategy. In June 2021, one respondent (1.1%) had an ineffective coping strategy, and three (3.2%) had an equal score between approach and avoidant coping strategies. Among the avoidant coping strategy, doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping, and turning to work or other activities to take the mind off things were the most coping strategies chosen by the respondents in February and June 2021. In

Table 1. The result of the DASS-21 questionnaire among resident physicians

Variables	Time points, n			
	Aug-20 (n = 60)	Oct-20 (n = 93)	Feb-21 (n = 96)	Jun-21 (n = 94)
Depression				
Normal	60	92	95	92
Mild	0	1	1	2
Moderate	0	0	0	0
Severe	0	0	0	0
Extremely severe	0	0	0	0
Anxiety				
Normal	57	87	91	86
Mild	3	6	4	2
Moderate	0	0	1	6
Severe	0	0	0	0
Extremely severe	0	0	0	0
Stress				
Normal	59	93	96	93
Mild	1	0	0	1
Moderate	0	0	0	0
Severe	0	0	0	0
Extremely severe	0	0	0	0

DASS-21=Depression, Anxiety and Stress Scale 21

the same period, trying to find comfort in my religion or spiritual beliefs and praying or meditating were mostly chosen among other coping strategies despite not being considered as a coping strategy. The detailed coping strategies among resident physicians based on the Brief COPE questionnaire are described in Table 2.

In October 2020 and June 2021, the most frequent anxiety thought among the residents was getting infected, and the highest mean score of residents' worries was spreading COVID-19 to family members. The least mean score of residents' worries was routine COVID-19 screening, healthcare workers' adherence to health safety protocol, and the COVID-19 pandemic affecting my/my family's finances. Moreover, most of the residents chose proud being on the front line and good interprofessional collaboration as some of the positive points during the COVID-19 pandemic in both time points. Positive points, worries, and anxiety thoughts during the COVID-19 pandemic among resident physicians were summarized in Table 3.

DISCUSSION

The COVID-19 pandemic affects people's lives worldwide, including healthcare workers. As COVID-19

Table 2. Coping strategies among resident physicians based on the Brief COPE questionnaire

Coping strategies	Time points		
	Feb-21 (n = 96), mean (SD)	Jun-21 (n = 94), mean (SD)	
Avoidant coping	I've been turning to work or other activities to take my mind off things.	2.6 (0.66)	2.6 (0.66)
	I've been saying to myself "this isn't real".	1.4 (0.55)	1.4 (0.62)
	I've been using alcohol or other drugs to make myself feel better.	1.1 (0.39)	1.2 (0.51)
	I've been giving up trying to deal with it.	1.3 (0.48)	1.4 (0.60)
	I've been refusing to believe that it has happened.	1.2 (0.42)	1.3 (0.49)
	I've been saying things to let my unpleasant feelings escape.	2.4 (0.81)	2.3 (0.75)
	I've been using alcohol or other drugs to help me get through it.	1.1 (0.37)	1.2 (0.49)
	I've been criticizing myself.	2.5 (0.70)	2.4 (0.64)
	I've been giving up the attempt to cope.	1.4 (0.56)	1.4 (0.68)
	I've been doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping.	2.9 (0.68)	2.9 (0.72)
Approach coping	I've been expressing my negative feelings.	2.4 (0.65)	2.3 (0.64)
	I've been blaming myself for things that happened.	1.7 (0.70)	1.6 (0.62)
	I've been concentrating my efforts on doing something about the situation I'm in.	2.7 (0.64)	2.7 (0.59)
	I've been getting emotional support from others.	2.9 (0.74)	2.9 (0.68)
	I've been taking action to try to make the situation better.	2.8 (0.64)	2.8 (0.60)
	I've been getting help and advice from other people.	2.8 (0.68)	2.8 (0.69)

Table continued on next page

Table 2. (continued)

Coping strategies	Time points	
	Feb-21 (n = 96), mean (SD)	Jun-21 (n = 94), mean (SD)
I've been trying to see it in a different light, to make it seem more positive.	2.9 (0.65)	2.8 (0.63)
I've been trying to come up with a strategy about what to do.	2.9 (0.66)	2.8 (0.62)
I've been getting comfort and understanding from someone.	2.8 (0.67)	2.8 (0.66)
I've been looking for something good in what is happening.	2.9 (0.56)	2.9 (0.67)
I've been accepting the reality of the fact that it has happened.	2.9 (0.56)	3.0 (0.60)
I've been trying to get advice or help from other people.	2.6 (0.65)	2.8 (0.62)
I've been learning to live with it.	2.9 (0.49)	3.0 (0.48)
I've been thinking hard about which steps to take.	2.6 (0.64)	2.7 (0.62)
I've been making jokes about it.	2.2 (0.87)	2.2 (0.88)
Non-coping I've been trying to find comfort in my religion or spiritual beliefs.	3.1 (0.62)	3.1 (0.60)
I've been praying or meditating.	3.0 (0.53)	3.0 (0.68)
I've been making fun of the situation.	1.6 (0.65)	1.7 (0.76)

Brief COPE= Brief Coping Orientation to Problems Experienced; SD=standard deviation

Table 3. Positive points, worries, and anxiety thoughts during the COVID-19 pandemic among resident physicians

Description	Time points	
	Oct-20 (n = 93)	Jun-21 (n = 94)
Positive points during the COVID-19 pandemic, mean (SD)		
Proud being on the front line	7.5 (1.94)	7.4 (1.78)
Good interprofessional collaboration	7.5 (1.48)	6.8 (1.54)
Appreciated as the front line	6.6 (1.65)	6.4 (1.48)
Feeling there are some positive things during the pandemic	6.4 (1.68)	6.4 (1.44)
Worries, mean (SD)		
Spreading COVID-19 to family members	8.7 (2.01)	8.3 (2.09)
Become severe COVID-19 patient	8.1 (2.02)	7.6 (1.90)
Infected from hospital	7.8 (1.85)	7.8 (1.98)
Less community awareness and discipline	7.8 (1.95)	7.6 (2.04)
Less competence as pulmonologist (in non-COVID-19)	7.7 (1.95)	7.2 (1.89)
Healthcare system collapsing due to COVID-19	7.7 (1.84)	7.9 (1.84)
Infected from outside the hospital	7.4 (1.91)	7.1 (2.25)
Become the source of COVID-19 infection	6.8 (2.29)	7.5 (1.84)
Disrupting residency program	7.2 (1.92)	6.8 (2.20)
COVID-19 pandemic affected my/family financially	6.2 (2.38)	6.0 (2.30)
Healthcare workers adherence to health safety protocol	5.8 (2.05)	6.2 (2.02)
Routine COVID-19 screening	5.6 (2.09)	6.8 (1.99)
Anxiety thoughts, n (%)		
Infected by COVID-19	65 (68)	65 (69)
Doctor death due to COVID-19	50 (52)	55 (59)
Far from family	33 (34)	23 (24)
Heavy workload	25 (26)	43 (46)
Uncertain future	18 (19)	9 (10)
Patient death due to COVID-19	8 (9)	27 (29)
Local lockdown applied	2 (2)	3 (3)

COVID-19=coronavirus disease 2019;
SD=standard deviation

frontline workers, pulmonary resident physicians face challenges between their personal lives and their training. The evolving information regarding the pandemic, implementation of new guidelines, transmission risk to family members at home, and economic changes have increased their burden besides the residency program tasks. These changing situations might become a stressor affecting their mental health.

The highest stress level among resident physicians in this study occurred in June 2021, followed by October 2021. In the four time points, all cases were mild depression, mostly found in June 2021. Meanwhile, the highest number of moderate anxiety was only found in June 2021. These data demonstrated that mental condition among resident physicians was worst in June 2021. This result might be associated with the highest frequency of resident physicians who confirmed positive for COVID-19 in that period (20.8%). The increased workload amid limited health personnel and the fear of getting infected might affect the resident physicians' mental health.

Another reason might be due to the increased number of COVID-19 patients during that period, as illustrated in Figure 1.^{4,5} Since the beginning of the pandemic, the period of June to July 2021 had the highest peak of COVID-19 cases and the highest positive and death rates.^{4,5} Indonesia was on the brink of a health system collapse.⁶ Oxygen and antiviral became rare, and the bed occupation ratio was high that almost all hospitals in most cities were full.⁷ These results are different compared to pediatric resident physicians in the USA, with a higher number of depression and stress levels.⁸ We suggested that this result might be associated with the effective coping strategies among the resident physicians in this study. Besides, they were frequently counseled, had routine polymerase chain reaction SARS-CoV-2 screening, and were given the guarantee of protection by the university and government, including incentives, vaccination, health insurance, and the availability of personal protection equipment at their workplace.

In addition, the stress level in October 2020 was relatively high because of the increased number of COVID-19 cases (Figure 2). Compared to October 2020, the number of new cases in February 2021 was higher.^{4,5} However, almost all resident physicians had already been vaccinated by that time. Vaccination in Indonesia began in January 2021, with healthcare

workers and the elderly as the priority group. This might produce a sense of security or safety within themselves and toward their parents or older family members, affecting their behavior regarding the high number of cases. Moreover, the number of cases in February 2021 was much less than in June 2021.

The situation during the time points when the questionnaire was obtained might be correlated with the results. The most frequent anxiety thought among the resident physicians was infected by COVID-19 in two time points, followed by doctor death due to COVID-19 and heavy workload in June 2021, which could have been caused by the sudden steep increase of cases and mortality at that time. Furthermore, in October 2020 and June 2021, the highest mean score of resident physicians' worries was spreading COVID-19 to family members and followed by the healthcare system collapsing due to COVID-19 in June 2021, when the condition in Indonesia was at its worst since the beginning of the pandemic as previously mentioned. The least mean score of resident physicians' worries were routine COVID-19 screening, healthcare workers' adherence to health safety protocol, and COVID-19 pandemic affected my/family finances, showing that they had confidence in the routine screening provided and healthcare workers' attitudes toward the pandemic.

The resident physicians had been working in the COVID-19 ward since the early pandemic in March 2020. We supposed that they might already adapt to the condition; therefore, only a few were affected. Based on the Brief COPE results in February and June 2021, most resident physicians had effective coping strategies. Previously, having a positive attitude was reported as a coping strategy among health workers in Indonesia.⁹ Our study showed that most resident physicians felt proud being the frontline workers and considered good interprofessional collaboration as positivity during the COVID-19 pandemic in October 2020 and June 2021.

Furthermore, in the current study, doing something to think about it less, such as going to movies, watching TV, reading, daydreaming, sleeping, or shopping, and turning to work or other activities to take the mind off things were the most coping strategies done by the respondents in February and June 2021. Humor and religion are considered as neither approach nor avoidance coping in the Brief COPE questionnaire analysis.² Interestingly, religious

coping and mindfulness were most frequently chosen among other coping strategies. In other words, most resident physicians chose to pray and got connected to their religion to adapt to their condition. These results showed that religion could be an essential factor for the effective strategy among resident physicians.

Indonesia is a country that believes in God with a majority Muslim population, which might affect the coping strategies applied when facing a stressful condition. Religious coping, including faith-based practices and belief systems, as a vital coping strategy was also observed in Pakistan's frontline emergency health workers (Muslim majority) during the COVID-19 pandemic.¹⁰ Personal mindfulness as a coping strategy was applied among resident physicians in various specialties in the USA, in addition to spending time with family and friends and exercising or yoga.¹¹ A survey distributed to health professionals in the majority of low- and middle-income countries showed that getting support from the family and having positive thinking were the most common coping strategies, followed by being religious and praying, as well as adequate sleep and food intake.¹² On the other hand, health professionals in India distracted themselves with hobbies and spending more time with family to cope with the pandemic.¹³ A study in the United Kingdom reported different coping strategies, which were socializing with loved ones (e.g., through video calls), engaging in exercise, being occupied with jobs, being occupied with studies, avoiding negative news on COVID-19, consuming alcohol, doing healthy eating, engaging in meditation activities, gaming activities, hope, and doing self-care and self-appreciation.¹⁴ In our study, using alcohol or other drugs to make myself feel better was the least opted strategy compared to other avoidant strategies. Few people opting for this coping strategy might be because Indonesians, with the majority of Muslims, are not used to drinking alcohol. Furthermore, drinking alcohol is not a common culture in most parts of Indonesia. Based on these reports, we suggested that the different coping strategies might be correlated to sociodemographic and cultural background.

In conclusion, mental health among the resident physicians might be associated with the current situation of the COVID-19 pandemic. An effective coping strategy might be the key to protecting

resident physicians' mental health when facing the COVID-19 pandemic. Practicing religion and praying or meditating might be essential factors to cope with psychological distress and a key to faster adaptation to the condition affected by the global pandemic. However, the sociodemographic and cultural background might affect the coping strategy among the resident physicians.

Conflict of Interest

The authors affirm no conflict of interest in this study.

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