Prevalence Of Depression, Anxiety, And Stress Among Indonesian Healthcare Workers During The Covid-19 Pandemic And Its Related Factors

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Abstract

Introduction: Healthcare workers are the most vulnerable group to infection and mental-emotional problems due to their professional exposure during the COVID-19 pandemic. The studies about healthcare workers' mental-emotional problems in Indonesia are still limited. This study aimed to determine the prevalence of depression, anxiety, and stress among Indonesian healthcare workers during the COVID-19 pandemic and its related factors

Methods: This is an analytic cross-sectional study involving Indonesian healthcare workers who were still working during the COVID-19 pandemic. An online-based questionnaire in Google Form, including the Depression Anxiety and Stress Scale – 21 (DASS-21) Questionnaire, was distributed through social media from December 2020 to February 2021. The related factors studied were age, gender, domicile, worktime experience, workplace, type of workers, marital status, comorbidities, and COVID-19 history.

Results: A total of 176 respondents were involved in the study, the overall prevalence of mental-emotional problems was 18.75%; with a prevalence of depression was 10.8%, anxiety 12.5%, and stress 12.5%. The incidence of depression was more commonly found in non-functional occupations (OR 4.97; 95% CI 1.00-24.69; p=0.05). The incidence of anxiety was less common in male health workers (OR 0.23; 95% CI 0.08 – 0.66; p=0.007), and nurse occupation (OR 6.41; 95% CI 1.65 – 24.86, p=0.007). The incidence of stress was more commonly found in nurse (OR 8.38; 95% CI 1.49 – 47.13; p=0.014), non-functional (OR 10.17; 95% CI 1.78 – 58.04; p=0.008).

Conclusion: Mental emotional problems during the COVID-19 pandemic were common among Indonesian healthcare workers, both the front-liners and non-functional health workers. Gender and type of worker were significantly associated with depression, anxiety, and stress.

Introduction

Coronavirus disease 2019 (COVID-19) was first discovered in Wuhan, China in December 2019. This disease was rapidly spreading throughout the world, so the World Health Organization (WHO) announced the COVID-19 as a pandemic on March 11, 2020.[1] The first COVID-19 case in Indonesia was discovered on March 3, 2020, and the surge of cases is still ongoing until now. From October to November 2020 there was a decreasing number of new cases but in July 2021 cases in Indonesia escalate to 56,757 confirmed cases per day. [2]

Healthcare workers are one of the most vulnerable groups to severe infection due to their professional exposure during the COVID-19 pandemic. Since 6 months after the pandemic, 188 Indonesian healthcare workers died because of COVID-19, and the vast majority were nurses and primary doctors.[3] Other risk factors that contributed to severe COVID-19 infection were age over 60 years, comorbid diseases such as diabetes, hypertension, cardiovascular disease, chronic respiratory disease, and cancer. Male gender and smoking habits could also aggravate the course of the disease.[4]

The COVID-19 pandemic not only has had an impact on physical health but also mental health. Healthcare workers have been under overwhelming psychological pressure, which may lead to mental-emotional problems. Some studies found an increasing number of mental-emotional problems among healthcare workers during the COVID-19 pandemic; 12-78% had depression, 24-68% had anxiety, and 29-76% had stress.[5-7] However, there have yet not been many studies about healthcare workers' mental-emotional problems in Indonesia and, some studies had been done in a limited population only. We aimed to determine the prevalence of mental-emotional problems such as depression, anxiety, and stress among Indonesian healthcare workers during the COVID-19 pandemic and its related factors.

Methods

It was a cross-sectional study conducted from December 2020 to February 2021. The questionnaire in the form of Google Form was distributed through Instagram, Whatsapp, and Line by snowball sampling and purposive sampling. The eligible respondents were Indonesian healthcare workers who were working during the COVID-19 pandemic and filled out the questionnaire completely. Healthcare workers with previous mental-emotional problems or who had severe trauma before the pandemic was not included in this study

The questionnaire consisted of sociodemographic data, the DASS-21 questionnaire, and mental-emotional related factors, such as age, gender, domicile, worktime experience, workplace, type of workers, marital status, comorbidities, and COVID-19 history. The DASS-21 questionnaire is an abbreviated version of the DASS questionnaire which originally had 42 questions. The DASS-21 questionnaire has been validated in Indonesia with a reliability rate using McDonald's ω 0.784 – 0.800 and has been used in various research populations in Indonesia.[8]

The DASS-21 is a self-report questionnaire, consisting of 21 items to measure the emotional states of depression, anxiety, and stress. Each of the three emotional states contains 7 items, divided into subscales with similar content. Patients are asked to score every item on a scale from 0 (did not apply to me at all) to 3 (applied to me very much). Sum scores are computed by adding up the scores on the items and multiplying them by 2. Anxiety level was categorized as normal if score 0-7, mild 8-9, moderate 10-14, severe 15-19, extremely severe 20+. Depression level was categorized normal if score 0-9, mild 10-13, moderate 14-20, severe 21-27, and extremely severe 28+. Stress level was categorized normal if score 0-14, mild 15-18, moderate 19-25, severe 26-33, and extremely severe 34+ on the Dass-21 questionnaire. [9]

The research data were analyzed with the Statistical Package for the Social Sciences (SPSS) 25 software, and displayed in the form of tables, frequencies, and percentages. Bivariate statistical analysis was performed using chi-square analysis to examine the relationship between the incidence of depression, anxiety, stress with various independent factors studied (p-value). The researcher also calculated the odds ratio, and 95% CI. This research has received approval from the ethical committee of the Faculty of Medicine, University of Pelita Harapan with the number 008/K-LKJ/ETIK/I/2021.

Results

A total of 176 respondents were involved in the study, most of them aged <60 years (98.9%), lived in Java (63,1%) at their own houses (93,2%). Most of the respondents were front-liners healthcare workers, such as general practitioners, medical specialists, and nurses. 25 respondents worked as dentists, laboratory assistants, sanitarians, midwives, and pharmacists, categorized as others. More than 50% of the respondents worked at COVID-19 reference hospital, 15 respondents who worked at private practice, Puskesmas, and private laboratories categorized as others. A total of 13 respondents (7.4%) had a history of comorbidities (asthma, diabetes, cancer, and blood hypercoagulation) and the majority of respondents (89.2%) had never been infected with COVID-19 (Table 1).

Table 1. Sociodemographic Characteristics of Respondents

Characteristics		Frequency (%)
Age (years)	<60 years old	174 (98,9)
	≥60 years old	2 (1,1)
Gender	Male	91 (51,7)
	Female	85 (48,3)
Residence	Home	164 (93,2)
	Temporary Accommodation	12 (6,8)
Work time experience	≤ 2 years	136 (77,3)
	>2 years	40 (22,7)
Workplace	COVID-19 Reference Hospital	91 (51,7)
	COVID-19 Non-Reference Hospital	70 (39,8)
	Others	15 (8,5)
Type of worker	General Practitioners	59 (33,5)
	Medical Specialist	51 (29,0)
	Nurse	22 (12,5)
	Non-Functional/Managerial	19 (10,8)
	Others	25 (14,2)
Region	Java Island	111 (63,1)
	Outside Java	65 (36,9)
Marital Status	Married	121 (68,6)
	Single/Divorce	55 (31,3)
Comorbidities	Yes	13 (7,4)
	No	163 (92,6)
COVID-19 History	Yes	19 (10,8)
	No	157 (89,2)

The overall prevalence rate of mental-emotional problems obtained from this study was 18.75%, with a prevalence of depression of 10.8%, anxiety of 12.5%, and stress of 12.5% (table 2). There was 1 respondent (3.03%) who had depression and anxiety, 1 respondent (3.03%) had depression and stress, 5 respondents (15.15%) had anxiety and stress, and 11 respondents (33.33%) had depression, anxiety, and stress.

Table 3 showed there was a significant association between type of worker and depression; non-functional healthcare workers were more likely to have depression rather than general practitioners (OR 4.97; 95%CI 1.00-24.69; p=0.05). There was also a significant association between type of worker and anxiety (Table 4). Nurses were 6.4 times more likely to have anxiety rather than general practitioners (OR 6.41; 95%CI 1.65 – 24.86; p=0.007). Male healthcare workers were more unlikely to have anxiety rather than female works (OR 0.23; 95% CI 0.08 – 0.66; p=0.007). Table 5 showed a significant association between type of worker and stress. Nurses were 8.38 times more likely to have stress (OR 8.38; CI 95% 1.49 – 47.13; p=0.014). Non-functionals healthcare workers were 10.17 times more likely to have stress (OR 10.17; CI 95% 1.78 – 58.04; p=0.008), and others (OR 9.00; CI 95% 1.67 – 48.40; p=0.008) compared to general practitioners.

Table 2. Prevalence of mental-emotional problem based on the DASS-21 questionnaire & combination of mental-emotional problems

Mental Emotional Problem		**Frequency (%)**
Depression		
	Normal	157 (89,2)
	Mild	15 (8,5)
	Moderate	4 (2,3)
Anxiety		
	Normal	154 (87,5)
	Mild	7 (4,0)
	Moderate	12 (6,8)
	Severe	2 (1,1)
	Extremely Severe	1 (0.6)
Stress		
	Normal	154 (87,5)
	Mild	13 (7,4)
	Moderate	7 (4,0)
	Severe	2 (1,1)
Combination of 2 Mental Emotional Problems		
Depression & Anxiety		1 (3,03)
Depression & Stress		1 (3,03)
Anxiety & Stress		5 (15,15)

Table 3. Bivariate analysis of the relationship between the incidence of depression and independent factors

Variables		Depression (%)		OR	95% CI	p-value
		No	Yes			
Age	< 60 years	155 (98.7)	19 (100)	0.89	0.84 - 0.93	1.00
	≥60 years	2 (1.3)	0 (0)			
Gender	Male	85 (54.1)	6 (31.6)			
	Female	72 (45.9)	13 (68.4)	0.39	0.14 - 1.08	0.10
Residence	Home	146 (93.0)	18 (94.7)	1.35	0.16 -11.12	0.62
	Temporary Accommodation	11 (7.0)	1 (5.3)			
Work time experience	≤ 2 years	120 (76.4)	16 (84.2)	0.60	0.16 - 2.20	0.57
	>2 years	37 (23.6)	3 (15.8)			
Workplace	COVID-19 Reference Hospital	78 (49.7)	13 (68.4)	Reff	Reff	Reff
	COVID-19 Non-Reference Hospital	66 (42.0)	4 (21.1)	2.75	0.85 - 8.83	0.13
	Others	13 (8.3)	2 (10.5)	1.08	0.21 - 5.36	1.00
Type of worker	General Practitioners	56 (35.7)	3 (15.8)	Reff	Reff	Reff
	Medical Specialist	46 (29.3)	5 (26.3)	2.02	0.46 - 8.94	0.46
	Nurse	17 (10.8)	5 (26.3)	0.93	0.17 - 5.13	1.00
	Non-Functional/Managerial	15 (9.6)	4 (21.1)	4.97	1.00 - 24.69	**0.05**
	Others	23 (14.6)	2 (10.5)	1.62	0.25 - 10.36	0.63
Marital Status	Married	108 (68.8)	13 (68.4)	0.98	0.35 - 2.73	1.00
	Single/Divorce	49 (31.2)	6 (31.6)			
Comorbidities	Yes	10 (6.4)	3 (15.8)	2.75	0.68 - 11.06	0.15
	No	147 (93.6)	16 (84.2)			

Table 4. Bivariate analysis of the relationship between the incidence of anxiety and independent factors

Variables		Anxiety (%)		OR	95% CI	p-value
		No	Yes			
Age	< 60 years	152 (98.7)	22 (100)	1.01	0.99 - 1.03	1.00
	≥60 years	2 (1.3)	0 (0)			
Gender	Male	86 (55.8)	5 (22.7)	0.23	0.08 - 0.66	**0.007**
	Female	68 (44.2)	17 (77.3)			
Residence	Home	144 (93.5)	20 (90.9)	0.69	0,14 - 3.40	0.64
	Temporary Accommodation	10 (6.5)	2 (9.1)			
Work time experience	≤ 2 years	34 (22.1)	6 (27.3)	1.32	0.48 - 3.64	0.78
	>2 years	120 (77.9)	16 (72.7)			
Workplace	COVID-19 Reference Hospital	79 (51.3)	12 (54.5)	Reff	Reff	Reff
	COVID-19 Non-Reference Hospital	62 (40.3)	8 (36.4)	1.17	0.45 - 3.05	0.92
	Others	13 (8.4)	2 (9.1)	0.98	0.19 - 4.92	0.98
Type of worker	General Practitioners	55 (35.7)	4 (18.2)	Reff	Reff	Reff
	Medical Specialist	48 (31.2)	3 (13.6)	0.85	0.18 - 4.03	1.00
	Nurse	15 (9.7)	7 (31.8)	6.41	1.65 - 24.86	**0.007**
	Non-Functional/Managerial	16 (10.4)	3 (13.6)	2.57	0.52 - 12.73	0.35
	Others	20 (13.0)	5 (22.7)	3.43	0.83 - 14.09	0.11
Marital Status	Married	109 (70.8)	12 (54.5)	0.49	0.20 - 1.22	0.19
	Single/Divorce	45 (29.2)	10 (45.5)			
Comorbidities	Yes	11 (7.1)	2 (9.1)			
	No	143 (92.9)	20 (90.9)	1.30	0.26 - 6.29	0.66

Table 5. Bivariate analysis of the relationship between the incidence of stress and independent factors

Variables		Stress (%)		OR	95% CI	p-value
		No	Yes			
Age	< 60 years	152 (98.7)	22 (100)	0.98	0.96 - 1.00	1.00
	≥60 years	2 (1.3)	0 (0)			
Gender	Male	84 (54.5)	7 (31.8)	2.57	0.99 - 6.65	0.77
	Female	70 (45.5)	15 (68.2)			
Residence	Home	143 (92.9)	21 (95.5)	0.61	0.76 - 5.04	1.00
	Temporary Accommodation	11 (7.1)	1 (4.5)			
Work time experience	≤ 2 years	38 (24.7)	2 (9.1)	3.27	0.73 - 14.66	0.17
	>2 years	116 (75.3)	20 (90.9)			
Workplace	COVID-19 Reference Hospital	79 (51.3)	12 (54.5)	Reff	Reff	Reff
	COVID-19 Non-Reference Hospital	62 (40.3)	8 (36.4)	0.84	0.32 - 2.20	0.92
	Others	13 (8.4)	2 (9.1)	1.01	0.20 - 5.05	1.00
Type of worker	General Practitioners	57 (37.0)	2 (9.1)	Reff	Reff	Reff
	Medical Specialist	47 (30.5)	4 (18.2)	2.42	0.42 - 13.82	0.41
	Nurse	17 (11.0)	5 (22.7)	8.38	1.49 - 47.13	**0.014**
	Non-Functional/Managerial	14 (9.1)	5 (22.7)	10.17	1.78 - 58.04	**0.008**
	Others	19 (12.3)	6 (27.3)	9.00	1.67 - 48.40	**0.008**
Marital Status	Married	105 (68.2)	16 (72.7)	0.80	0.29 - 2.17	0.85
	Single/Divorce	49 (31.8)	6 (27.3)			
Comorbidities	Yes	11 (7.1)	2 (9.1)			
	No	143 (92.9)	20 (90.9)	0.76	0.15 - 3.72	0.66

Discussion

The prevalence of mental-emotional problems in healthcare workers from this study was 18.75%; 10.8% of respondents had depression, and 12.5% of respondents had either stress or anxiety. This number was smaller than the study result by Zhu, which found the incidence of stress, depression, and anxiety in healthcare workers during the pandemic was 29.8%, 13.5%, and 24.1%.[10] Systematic reviews from many other countries showed that during the COVID-19 pandemic 12.1% - 55.89% of healthcare workers had depression, 24.1% - 67.55% had anxiety, and 29.8% - 62.99% had stress.[6,7]

There are several possibilities that may cause differences in the results of this study from other previous studies. In the study by Kang, et al in Wuhan, data collection was carried out at the beginning of the pandemic, January 29 to February 4, 2020.[11] In addition, a similar study by Zhu, et al in China, sampling was carried out at

the beginning of the pandemic, in February 2020, where cases of COVID -19 are still relatively new since it was declared by the World Health Organization (WHO) as a pandemic.[10] This research was conducted in December – February 2021, when the pandemic has been running for a year and vaccines have begun to be given to health workers in Indonesia. Apart from the time aspect, there are differences in the sampling locations. In the study of Zhu, et al, and Kang, et al, the respondents came from Wuhan, China. Wuhan was the city where the first case of COVID-19 was discovered. This can cause an increase in mental-emotional problems in respondents.[10,11] Differences in results from studies can also be caused by the use of different questionnaires, as in the study of Wilson, et al in India using the Cohen's Perceived Stress Scale questionnaire to examine stress factors, the Public Health Questionnaire – 9 to examine depression, and Generalized Anxiety Disorder – 7 to examine anxiety.[12] In this study, the DASS-21 questionnaire was used because the questionnaire included 3 factors and because data collection during the pandemic period was required online. Therefore, the researchers looked for a more effective questionnaire so that the sample was more willing to answer.

In this study, researchers found that the incidence of health workers experiencing mental-emotional problems not only occurred in the mild category, but also 1.1% experienced severe anxiety or severe stress, and 0.6% experienced very severe anxiety. Researchers also found respondents who experienced a combination of menta-emotional problems 11 respondents (33.33%) experienced depression, stress, and anxiety, 5 respondents (15.15%) experienced a combination of stress and anxiety and 3.03% experienced a combination of stress and depression, as well as anxiety and depression. Early detection of mental-emotional problems should have been carried out to prevent complications. The combination of mental and emotional problems can cause increased burden, needing different treatment, and more severe complications, so early detection is very important. Complications that can occur are difficulty in concentrating which can cause ineffective work, and other mental-emotional problems. Mental-emotional problems can also interfere with the immune systems, making the human body more susceptible to disease, and can lead to self-harm/suicide.[13] In a study conducted by Sher, et al based on the research of Kawohl, et al, it was found that due to COVID-19, many people lost their jobs which caused mental-emotional problems and caused an increase of around 2135 to 9570 suicides every year in the world.[14]

Gender had a significant role in the incidence of anxiety (p=0.007), with a 95% confidence interval of 0.08 – 0.66. By odds ratio, it was found that the risk factors were more likely to occur in females. This result was similar to the study by Wilson in India and Lai in China.[12,15] There was a significant relationship between health anxiety and metacognitive beliefs about the uncontrollability of worry in female gender. Thus, females tend to develop more anxiety compared to males.[16]

This study found a significant association between the type of work and depression (p=0.03), stress (p=0.007), and anxiety (p<0.01). Nurses were less at risk for depression than general practitioners. In terms of stress factors, the researchers found 3 populations that significantly contributed to the problem of stress, i.e. nurse, non-functional/managerial and others (dentist, laboratory assistant, sanitarian, midwife, pharmacist). The non-functional occupation was also found to be more prone to depression compared to general practitioners. The results of this study were similar with study by Lai, which showed that nurse are more prone to experienced mental-emotional problems such as stress, depression, and anxiety. [15] The study Hassamal found that healthcare assistant staff such as administrative staff with indirect patient contact (OR 5.9; CI 95% 1.06 - 111.01) and administrative staff with

direct patient contact (OR 8.9; CI 95% 1.46 - 173.03) tend to experience more stress than doctors. Non-functional and managerial healthcare worker were prone to stress, due to an increase in work and dependents compared to before. [17] Nurses were more prone to stress because they had more frequent contact with COVID-19 patients and were more easily exposed to COVID-19.[18] They also were more likely to have anxiety compared to general practitioners. It was probably caused by fear of infecting others, being transmitted, and lack of confidence in the quality and quantity of personal protective equipment (PPE) such as masks and goggles. Increased mental and emotional problems can also be caused by the lack of personal protective equipment (PPE) available at health facilities as well as less routine swab examination and rapid test facilities for health workers.[19] For this reason, it is important to carry out early detection and management to reduce emotional mental problems in all health workers.

This research also has some limitations. First, data collection for research respondents must be done online, so many health workers refuse to be respondents. In addition, based on data from CNN Indonesia, the Ministry of Communication and Information said that Indonesia has 12,548 region that do not have a 4G network.[20] So there is a probability that the level of participants in certain areas is still relatively low due to difficulties in finding networks. Second, the time for data collection is limited, so that data collection is not optimal. Although there are many limitations in this study, it can be concluded that this research has not been widely carried out with a sample of health workers covering all of Indonesia.

Conclusion

The overall prevalence of health workers experiencing depression was 19 respondents (10.8%), stress and anxiety each was 22 respondents (12.5%). There is a significant relationship between gender and anxiety factors, increased in the female gender. In addition, there is a significant relationship between the type of work with depression, stress, and anxiety factors.

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