



PREVALENCE AND PREDICTORS OF STRESS, ANXIETY, SYMPTOMS OF DEPRESSION
IN HEALTH WORKERS DURING THE COVID-19 PANDEMIC

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Abstract

The spread of the *Coronavirus* rapid 2019 and many deaths caused disruption Psychological health for health workers who work on the front lines who are in direct contact with COVID-patients¹⁹ during the pandemic. To know the relationship of demographic factors with the level of stress, anxiety, and symptoms of depression in health workers. This research is a quantitative research type with approach *cross sectional*. The population in this study were all 82 health workers at Bandar Negara Husada Hospital. Sampling with total sampling technique. Test analysis using statistical test *chi square and binary logistic regression*.

From a total sample of 86, as many as 82 samples were willing to become respondents, with the result that the level of anxiety was 40.2% with the criteria of mild 3.7%, moderate 28% and severe 11%. Stress is 25.6% with moderate criteria 3.7% and 22% mild. Meanwhile, mild depression is 14.6%. Smoking history was a predictor of anxiety, while employment status was a predictor of depression in health workers. The prevalence of anxiety, stress, and depressive symptoms in health workers at Bandar Negara Husada Hospital, Lampung Province during the pandemic was lower than studies in other countries.

Keywords: Covid-19, stress, anxiety, depression, health workers.

Preliminary

At the end of 2019, we were surprised by the outbreak that occurred in China, precisely in Wuhan City, Hubei Province. This disease attacks the respiratory tract, which was originally transmitted by animals. The Chinese government, on January 7, 2020, identified the cause of this outbreak as a family of corona viruses that cause disease. *severe acute respiratory syndrome/SARS* and *MiddleEast respiratory syndrome/ MERS*. Of the 17,000 cases in Wuhan City indicated 82% had moderate infection, 15% with severe symptoms, and 3% were in critical care. This rapid transmission is due to droplet splashes from sufferers when coughing or sneezing and entering through the eyes, nose or mouth (Osler, 2020). and the scale of transmission of this outbreak. With 125,000 cases from 118 countries in a matter of two weeks, reported to WHO, the number of cases reported outside China has almost tripled, and the number of affected countries has almost tripled as well (World Health Organization, 2020).

The number of deaths worldwide in November 2020 is 1,475,825 (*Case Fatality Rate/ CFR* 2.3%) with 219 infected countries and 180 local transmission countries. Indonesia recorded that in the same month the number of people tested was 3,907,273 and those who were confirmed to be COVID-19 were 549,508 people with 458,880 people declared cured and 17,199 who died (*CFR* 3.1%) and 3,357 who were declared negative for COVID-19. 765 souls. Indonesia reported its first case on March 2, 2020. From March 2019 to December 2020, Indonesia recorded 504 health workers who died due to COVID-19, with details of 252 doctors, 171 nurses, 64 midwives, 7 pharmacists, and 10 medical



laboratory personnel (Yulika, 2021). 3Lecturers, Malahayati University, Lampung, Indonesia respondents as much as 65.6% experienced a level of anxiety from light to heavy. Symptoms of depression from mild to severe as much as 42.3%, which is dominated by women aged 30-39 years, and is mostly experienced by nurses and doctors (Hassannia, Moosazadeh, Zarghami, Taghizadeh, Dooki, & Omran, 2020). In a country Spain conducted research on health workers during April 2020 with 1. 422 respondents got stress disorder 56.6%, anxiety 58.6%, depression 46% and posttraumatic stress 41.1% (Luceño-Moreno, Talavera-Velasco, García-Albuérne, & Martín-García, 2020). Overall score of mental health disorders in health workers in Pakistan in in May 2020. The results obtained were 81 respondents (72.3%) who experienced moderate depression to very severe, 96 respondents (85.7%) experienced moderate to very high anxiety severe, and 101 respondents (10.1%) who reported moderate to extreme levels of stress (Sandesh, Shahid, Dev, Mandhan, Shankar, Shaikh, & Rizwan, 2020).

Health workers are greatly affected because they are directly caring for patients en confirmed Covid19. The results of the study show that many health workers experience anxiety, insomnia, depression and severe stress. Higher risk in women than men, nurses are taller than doctors, and middle/junior positions are higher than seniors (Kusumawardani, Nurika, & Luthfiyana, 2020). Research on health workers in Indonesia in May with 544 respondents from 24 provinces in Indonesia the results obtained with symptoms of depression as much as 22.8%, anxiety 28.1% and fatigue 26.8%, each symptom depression, anxiety and fatigue with p value < 0.05 and *Oda Ratio* (OR) 5.3, 1.36, and 3.92 (Sunjaya, Herawati, & Siregar, 2020).

The results of the study show that around 65.8% of respondents who are health workers in Indonesia experienced anxiety due to the covid 19 outbreak, as many as 3.3% experienced extreme anxiety severe and 33.1% experienced mild anxiety. While those who experience stress by 55%, very heavy stress level 0.8% and 34.5% mild stress. Health workers who experience depression by 23.5%, with major depression 0.5%, moderate 11.8% and mild depression 11.2%. There is a fairly strong relationship between anxiety ($r = 0.152$ $p = 0.000$), stress ($r = 0.086$ $p = 0.029$), and depression ($r = 0.111$ $p = 0.005$), regarding the concerns of health workers due to the coronavirus (Sumartyawati & Direja, 2021). The results of the study show that health workers in the world experience symptoms of mild stress and health workers also experience stress due to several risk factors such as sociodemographic, workload, stigma, and fears of infection. The government and health institutions are expected to support efforts to maintain and restore mental health such as providing counseling services and coping training (Handayani, Suminanto, Darmayanti, Widiyanto, & Atmojo, 2020).

Method

In this study, the researcher used a quantitative approach with the research design being an analytical survey using approach, *cross sectional* which is a study to study the dynamics of the correlation between risk factors and effects, by approaching, observing or collecting data all at once (Notoatmodjo, 2018). The study was carried out from 28 to 30 April 2021 at Bandar Negara Husada Hospital, Lampung Province with a total sampling of 82 respondents. The operational definition of the independent variable is demographic data including age, gender, marital status, domicile, occupation, COVID-19 survivor status and smoking history. While the operational definition of dependent is the level of stress, anxiety, depressive symptoms using the Depression Anxiety and Stress Scale 42 (DASS 42 instrument). This study uses the chi square test for bivariate data after obtaining a relationship to find the most influential predictor using binary regression test logistic. This study received ethical from Malahayati University with the approval number:1721/EC/KEPUNMAL/IV/2021 dated 27 April 2021.



RESULTS

Table 1. Distribution of Respondents Frequency by Demographic Characteristics

Variable		Frequency/%
Age (22-45 Years)	Young adult	6/7.3
	Middle adult	76/92.7
Gender	Male	22/26.8
	Female	60/73.2
Marital status	Unmarried	17/20.7
	Married	65/79.3
Education	Vocational	47/57.3
	Professional	35/42.7
Domiciled	Bandar Lampung	53/64.6
	Outside Bandar Lampung	29/35.4
Residence	Private	70/85.4
	Rent/Contract	12/14.6
Living under the same roof	Alone	5/6.1
	With Family	77/93.9
Survivor's history	Yes	8/9.8
	No	74/90.2
Smoking history	Yes	19/23.2
	No	63/76.8

Based on Table 1. The mean age of the 82 respondents who participated in the study was 30 years old (SD \pm 4,313) with an age range between 22 and 45 years. The majority of respondents are women by 73.2% with brown skin color as much as 57.3%. Vocational 3Lecturers, Malahayati University, Lampung, Indonesia education is 57.3%. Most of the respondents are married 79.3% and live in Bandar Lampung 64.6%. Respondents who have private residence 85.4% and 93.9% live with their nuclear family and extended family in one house. Respondents who have a history of COVID-19 survivors are 9.8% and a history of smoking is 23.3%.

Table 2. Frequency Distribution of Respondents by Job

Characteristics occupational		Frequency/%
Occupational Status	Civil servant	48/58.5
	Non civil servant	34/41.5
Length of work	<3 years	23/28
	\geq 3 years	59/72
Ward	IGD/RAJAL	25/30.5
	RANAP/Isolasi	39/47.6
	Laboratory	12/14.6
	Radiology	6/7.3
Direct contact with patient	Yes	60/73.2
	No	22/26.8
Duration of interaction with patient	\geq 2 hours	61/74.4
	< 2 hours	21/25.6



Based on table 2. It is known that the characteristics of the respondents based on their occupations, most of the respondents have the status of Civil Servants (PNS) 58.5% and the length of work of more than three years is 72%. With most of the work space in the Isolation inpatient room with 47.6%. Respondents who work in direct contact are 73.2% and the duration of interaction with patients more than 2 hours is 74.4%.

Table 3. Frequency Distribution of Respondents According to Psychological Characteristics

Category	Frequency n(%)	Criteria			
		Normal n(%)	Medium n(%)	Severe n(%)	Very Severe n(%)
		Anxiety			
	33 (40.2)	47 (57.3)	3 (3.7)	23 (28)	9 (11)
Stress	21 (25.6)	61 (74.4)	18 (22)	3 (3.7)	-
Depression	12 (14.6)	70 (85.4)	12 (14.6)	-	-

Based on table 3. The data obtained from respondents with an anxiety level of 40.2% with th criteria of mild 3.7%, moderate 28% and severe 11%. Experience stress is 25.6% with moderate criteria 3.7% and 22% mild. While the category of respondents who experienc depression is 14.6% with mild criteria.

Table 4. Multivariate Analysis of Predictors of Stress, Anxiety and Depression

Prediktor	Anxiety		Stress		Depression	
	P-value	OR	P- value	OR	P-value	OR
Age						
Gender						
Education						
Marital status						
Domiciled						
Residence						
Living under the same roof						
Smoking history						



Survivor's history

Occupational
status

Length of work

History of direct
contact

Length interaction

Respondents who smoke are at risk of anxiety, stress and depression of 3.429, 3.825, 4.38 times with p values of 0.040, 0.019 and 0.027 which means that there is a significant relationship between smoking history and anxiety, stress and depression. The status of worker at risk of stress and depression of 3,095 and 5,400 times occurred with p values of 0.040 and 0.023 which showed there was a significant relationship between work status and stress and depression.

Table. 5 Predictors of Stress, Anxiety and Depression Symptoms in Health Workers

Predictor	Anxiety		St		Depressi	
	P Value	OR(95%CI)	P Value	OR(95%CI)	P value	OR(95%CI)
Occupational status	0.062	2.447 (0.956-6.260)	0.038	3.099 (1.06-9.021)	0.021	5.438(129-233.20)
Smoking history	0.029	3.390 (1.13-10.128)	0.021	3.830 (1.22-11.979)	0.031	4.469 (1.14-17.41)

The variable data that has the most influence on the occurrence of anxiety is smoking history with OR 3.390 and p value 0.029 ($\alpha < 0.05$). The most influential variable for the occurrence of stress is smoking history with OR 3.830 and p value 0.021 ($\alpha < 0.05$). And the most influential variable in depression is the status of the workforce with OR 5.438 and p value 0.021 ($\alpha < 0.05$).

Worried

Of the 19 health workers who smoke, there are 12 health workers who experience anxiety, seven health workers do not experience anxiety. Health workers who do not experience anxiety, it is possible that the level of dependence on smoking is not high so that the use of masks does not affect the frequency of daily smoking. Health workers who smoke during this pandemic have their own anxiety because smokers are addicted, health workers who smoke cannot consume cigarettes all the time due to the use of masks of course this affects the freedom of smoking which results in anxiety for health workers.

There were 63 health workers who did not have a history of smoking, 21 who experienced anxiety and 42 others did not experience anxiety. In health workers who experience anxiety even though they do



not smoke, it can be related to aspects of precipitation and other predispositions to anxiety such as biological, psychological and socio-cultural factors in accordance with the supportive concept (Wermon, Rockland). Covid 2019 is a direct threat to someone who does not smoke and experiences anxiety due to the impact of covid19, one of which can cause death, this is connected with the concept of Interpersonal (Sullivan, Peplau). The results showed that from 82 respondents, the predictor of anxiety was a history of smoking 7.6% with a p-value of 0.040 ($\alpha < 0.05$), which means that anxiety and smoking history have a significant relationship. The OR value is 3,429, which indicates that respondents with a history of smoking have a tendency to worry 3,429 times greater than those without a history of smoking.

In a study in the UK (2020) on the smoking habit of British citizens, it showed that there was an increase in smoking as a maladaptive coping mechanism due to anxiety, boredom and fear of the impact of covid-19 (Kar et al, 2020). This research is in line with research in Bangladesh (Tasmin, 2020) with the result that health workers who smoke experience more anxiety, namely the correlation coefficient 0.07 ($\alpha < 0.05$). The results of research in Singapore (Chandra et al, 2020) involving medical and non-medical personnel in this case comorbid factors (smoking) are associated with anxiety with value = 0.011 ($\alpha < 0.05$).

Stress

Sars Cov type 2, the cause of covid 19, is more contagious and causes many deaths in various countries in a relatively short time. Based on current epidemiological and virological studies, it proves that COVID-19 is transmitted from symptomatic people to other people who are in close proximity through droplets, when a person is within 1 meter of a person who has respiratory symptoms for example, coughing or sneezing so that droplets risk of contacting the oral and nasal mucosa or the conjunctiva of the eye. Transmission can also occur through objects and surfaces contaminated with droplets around an infected person. In the context of COVID-19, transmission by air may possible under special circumstances, currently further research on transmission by air still needs to be studied further (Ministry of Health of the Republic of Indonesia, 2020).

Health workers who experience stress due to the use of masks at all times when they are outside cause health workers not to smoke, and cause prolonged anxiety so that it becomes a cause of stress for a smoker. Nicotine has a half-life of 2 hours which means that within two hours the nicotine in the body is reduced by half. And the body responds with withdrawal symptoms that make smokers want to consume cigarettes again this is related to the addictive effect of nicotine.

Employment status (Non PNS) in the study is associated with socio-economic factors (income) where if the expenditure becomes greater, it will make a person stressed (Hawari, 2011). During the pandemic, health workers try to maintain health/immunity for themselves and their families and of course it requires a lot of money to meet needs such as vitamins, medicines, a comfortable environment to stay at home, and so on. This is in accordance with the supportive concept model by Wermon and Rockland, namely the occurrence of mental disorders due to the inability to adapt to problems that arise today and have nothing to do with the past. Biological aspects such as fatigue, fatigue, dizziness felt by health workers. Psychological factors: easily anxious, worried, worried about whether or not finances are sufficient to meet the needs to stay healthy. Environmental factors: in the form of demands from families and hospitals to stay healthy and have good immunity, maladaptive responses in the form of anxiety that are not handled properly, causing stress (Nasir & Muhith, 2011). From March 2019 to December 2020, Indonesia recorded 504 health workers who died due to COVID-19, with details of 252 doctors, 171 nurses, 64 midwives, 7 pharmacists, and 10 medical laboratory



personnel (Yulika, 2021). Until now, the number of deaths continues to increase, of course this creates stress among health workers who are non-civil servants. The unavoidable shadow of death causes concern for the survival of the family left behind, the absence of pension/death insurance for the bereaved family makes non-PNS health workers worry about the future of their family life.

From the results of the study, it was found that the predictor factors for stress were smoking history and employment status (non-PNS), each p value was 0.019 and 0.040 ($\alpha < 0.05$), which means that there is a significant relationship with stress. The OR values of smoking history and employment status are 3,825 and 3,095, which means that the tendency of stress to occur with a history of smoking is 3,825 times compared to those who do not smoke. Meanwhile, the status of non-civil servant workers is 3,095 times more at risk of stress than civil servants.

Cigarettes that can have a bad effect on the lungs affect stress levels for respondents who are aware of the fact that COVID-19 attacks the respiratory system, this is in line with research in the Netherlands (Bommelle et al, 2020) with the results that smokers experience more stress than non-smokers with a p value = 0.001 ($\alpha < 0.05$). And for non-civil servants, this is related to income, where the increase in the cost of living is not directly proportional to income, which of course affects a person's stress level. This research is in line with Sumartyawati's research (2020) where income is related to stress levels with a value of value = 0.000 ($\alpha < 0.05$). This study is not in line with research in Israel (Mosheva, 2020) where financial factors do not affect stress and anxiety levels in health workers with value = 0.330 ($\alpha < 0.05$).

Depression

Of the 19 people who had depression, 13 people did not experience depression and six people who smoked were depressed. While 63 health workers who do not smoke, 57 people do not experience depression and six health workers who do not smoke experience depression. Health workers who do not smoke and are depressed are health workers who experience anxiety and stress that cannot be overcome by coping mechanisms, which means that the coping mechanisms of health workers are not sufficient to cope with the impact of the COVID-19 outbreak.

Smoking is a factor that causes depression where nicotine (tobacco) causes disturbances in the chemical composition of the brain in the body. Nicotine is an addictive substance that when people try to quit the body will respond with anxiety and symptoms of depression. Nicotine greatly affects the *neurotransmitters* body's, namely dopamine, serotonin and norepinephrine, which function in a person's mood disorders. The reduced content of serotonin and norepinephrine in the brain causes a person to become depressed, this is in accordance with the biological theory of mood disorders (Nasir & Muhith, 2011).

A total of 48 health workers with civil servant status, three people experiencing depression and 45 not experiencing depression. PNS who are depressed are caused by the threat, in this case covid19 (interpersonal theory) and the current maladaptive response (depression) according to the supportive concept.

The relationship between employment status (non civil servants) and depression in this study was associated with socioeconomic conditions. Economic demands during a pandemic that are not accompanied by income will become a burden for someone. Small income can be a source of stress, if it occurs in a long time span and is not handled properly it can make a person depressed. The concept model of supportive therapy according to Wermon and Rockland is the cause of mental disorders are



biopsychosocial factors and current maladaptive responses. Biopsychosocial factors in the form of demands to stay healthy for both the family and the hospital without being matched by the source of income obtained (in this case only relying on a monthly salary without any other income) with more expenses than the situation before the pandemic (increasing the need for vitamins, food, etc.) nutrition and recreation at home). Maladaptive coping occurs because unresolved stress causes symptoms of depression (Nasir & Muhith, 2011).

From the results of the study, it was found that the relationship between smoking history and employment status with depression was significant, with p-values of 0.027 and 0.023 ($\alpha < 0.05$). Odd ratio of smoking history is 4,385, which means that the risk of depression in smoking history is 4,385 times greater than non-smokers. While the OR status of the workforce is 5,400 meaning that the risk of depression in non-civil servants is 5,400 times greater than that of workers with civil servant status.

Research in Bangladesh (Tasmin, 2020) showed that health workers who smoked were more depressed with a correlation coefficient of 0.07 ($\alpha < 0.05$). While the relationship between employment status and income is in line with research in Indonesia (Sumartyawati, 2020) where there is a relationship between income and the level of depression of health workers with a value of value = 0.000 ($\alpha < 0.05$).

Conclusions And Recommendations

Conclusions:

1. In this study, the characteristics of most of the respondents were the average age of 30 years, female, married, white race, domiciled in Bandar Lampung, with private home status, and lived with extended/nuclear family, vocational education. PNS, working for more than three years, has no history of survivors or smoking, works in an isolation room, has contact with COVID-19 patients for more than two hours.
2. It was concluded that the most influential predictor of anxiety and stress were respondents with a history of smoking, while the predictor of depression was employment status. Anxiety level was 40.2% with mild criteria of 3.7%, moderate 28% and severe 11%. The stress level is 25.6% with moderate criteria 3.7% and 22% mild. Meanwhile, the level of mild depression is 14.6%.

Suggestion:

Health Agencies

For health agencies where health workers are the spearhead of a hospital's services. Of course, the mental health of health workers has an impact on services, they should:

1. Health workers who smoke who experience anxiety, stress, and depression should be placed in a room that does not cause a lot of stressors, or review the placement of health workers who smoke in a place that feels comfortable and safe. safe for these nakes.
2. Health workers who are non-civil servants who experience stress and depression should be supported in terms of meeting vitamins and basic necessities when diagnosed with covid19. In general, health workers are facilitated in evaluating their mental status on a regular basis so that they can anticipate the impact of COVID-19 on the mental health of health workers.

Educational Institutions



Institutions can become facilitators in providing support to students in conducting ongoing research and can collaborate with other related departments in developing research.

Health Workers

For health workers to maintain mental health in the face of a fairly long pandemic period, of course, positive coping mechanisms are needed in order to serve the community well.

Limitations of Research

For further researchers, it is hoped that they can be a reference and continue / look for more specific related factors, analyze the coping mechanisms of health workers and post-pandemic mental conditions. Research during a pandemic requires maintaining health protocols and the distance of the research place is quite far with road access. less secure, so in this study the distribution of the questionnaire was carried out by electronic media which affected the comfort/privacy factor of the respondents and the results of this study could differ from clinical findings. Embarrassment, laziness and others make respondents not necessarily reveal the true situation and fill out the questionnaire according to their feelings, this allows the results of the research to be biased.

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