

# Prevalence and predictors of stress, anxiety, and depression among healthcare workers managing Covid-19 pandemic in Bandar Lampung

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**Prevalence and predictors of stress, anxiety, and depression among healthcare workers managing Covid-19 pandemic in Bandar Lampung**

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**Abstract**

**Background:** The rapid spread of the Coronavirus 2019 and caused much mortality and also Psychological health disturbance for health workers who work on the front and direct contact with patients infected.

**Purpose:** To know the relationship of demographic factors with the level of stress, anxiety, and symptoms of depression in health workers.

**Method:** A quantitative study with design an analytical survey using a cross-sectional. The study took on April 2021 at Bandar Negara Husada Hospital, Lampung Province. The population was health workers with by a total sampling of 82 respondents. The instrument Depression Anxiety and Stress Scale 42 (DASS 42). Chi-square test and predictor analyzed data using binary regression test.

**Results:** The finding of 82 respondents, with 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 of 3.7% and 22% mild. Meanwhile, mild depression is 14.6%. The respondent who has a smoking history was a predictor of anxiety, while employment status was a predictor of depression.

**Conclusion:** The prevalence of symptoms of anxiety, stress, and depression among health workers at the Bandar Negara Husada Hospital, Lampung Province during the pandemic is still relatively under control and the anticipation of their in keeps psychological healthy in the confront of a fluctuate patient with COVID-19.

**Keywords:** Prevalence; Predictors; Stress; Anxiety; Depression; Healthcare workers; COVID-19 pandemic

**INTRODUCTION**

At the end of 2019, there was an outbreak 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 disease-causing coronaviruses. severe acute respiratory syndrome/SARS and Middle East respiratory syndrome/MERS. Of the 17,000 cases in Wuhan City, it was indicated that 82% had a moderate

infection, 15% had severe symptoms, and 3% were in critical care. This rapid transmission is due to droplets from the sufferer when coughing or sneezing and entering through the eyes, nose, or mouth (Osler, 2019). 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 countries affected has also almost tripled (World Health Organization, 2020).

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The number of mortality 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 of 3,907,273 samples and confirmed COVID-19 infected were 549,508 with 458,880 declared cured and 17,199 died (3.1%) and 3,357 negative. A total of 765 in Indonesia reported their first case on March 2, 2020. From March 2019 to December 2020, Indonesia recorded 504 health workers died because of COVID-19, confirmed of 252 doctors, 171 nurses, 64 midwives, 7 pharmacists, and 10 medical laboratory personnel (Yulika, 2021).

Healthcare workers certainly felt the biggest impact of COVID-19, where they struggle with patients who are being treated in health facilities. It is very important to see protect health workers for continuity of care in health facilities and also prevent cross-infection to other patients (Singhal, 2020; Muller, Stensland, & van de Velde, 2020; Blake, Bermingham, Johnson, & Tabner, 2020).

Research in China in February 2020 the results showed that from 5,062 respondents there were 681 health workers experienced stress (29.8%), depression (13.5%), and anxiety (24.1%). So women who have worked for over 10 years, with chronic disease, history of mental disorders, and Families confirmed or suspected of having COVID-19 are more affected by mental disorders (Zhu, Xu, Wang, Liu, Wu, Li, & Wang, 2020).

While the prevalence in India, conducted in April 2020. From 53.5% of health workers, with stress high rate of 3.7%, and the prevalence rate of health workers with depressive symptoms requiring treatment and anxiety symptoms that require a further evaluation is 11.4% and 17.7% respectively (Wilson, Raj, Rao, Ghiya, Nedungalaparambil, Mundra, & Mathew, 2020).

Based on research on health workers in Iran in April 2020 the results got from 2.045 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 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, Garcia-Albueme, & Martín-García, 2020). Overall score of mental health disorders in health workers in Pakistan 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 confirmed to Covid19. The results of the study show that many health workers experience anxiety, insomnia, depression to severe stress. Higher risk in women than men, nurses are higher than medical doctors, and middle/junior positions are higher than seniors (Kusumawardani, Nurika, & Luthfiyana, 2020; Liu, Yang, Zhang, Xu, Dou, Zhang, & Cheng, 2020; Lai, Wang, Qin, Tan, Ran, Chen, & Wang, 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 Odd Ratio (OR) 5.3, 1.36, and 3.92 (Sunjaya, Herawati, & Siregar, 2020).

7 The results of the study show that around 65.8% of respondents are health workers in Indonesia experience 3 anxiety because of the covid 19 outbreak, 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%

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mild stress. Health workers who experience depression by 23.5%, with major depression 3.5%, 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 (Nasrullah, Natsir, Twistiandayani, Rohayani, Siswanto, Sumartyawati, & Direja, 2021). The results of the study show that health workers in the world experience symptoms of mild stress and healthcare workers also experience stress due to several risk factors such as sociodemographic, workload, stigma, and fears of infection (Ramaci, Barattucci, Ledda, & Rapisarda, 2020; Gorini, Fiabane, Sommaruga, Barbieri, Sottotetti, La Rovere, & Gabanelli, 2020). The government and health institutions are expected to support efforts to maintain and restore health mental such as providing counseling services and

coping training (Handayani, Sumianto, Darmayanti, Widiyanto, & Atmojo, 2020).

## RESEARCH METHOD

This study used a quantitative approach with the research design an analytical survey and cross-sectional. It conducted on April 2021 at Bandar Negara Husada Hospital, Lampung Province with a total sampling of 82 respondents. The demographic data included age, gender, marital status, domicile, occupation, COVID-19 survivor status, and smoking history. While the instrument of stress, anxiety, depressive symptoms using the Depression Anxiety and Stress Scale 42 (DASS 42). Chi-square test and predictor analyzed the data using binary regression test logistic. The ethical clearance took from Malahayati University with the approval number: 1721/EC/KEP UNMAL/IV/2021.

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## RESULTS

Table 1. Distribution of Demographic Characteristics (N=82)

Demographic Characteristics	Categories	
	(M±SD)(Range)(Years)	(n/%)
Age	Young adult	6/7.3
	Middle adult	(30.28±4.313) (22-45 ) 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
Residence	Urban Areas	53/64.6
	Rural Areas	29/35.4
Home Living Status	Owners	70/85.4
	Renters	12/14.6
Living Status	Alone	5/6.1
	With Family	77/93.9
Has history COVID-19 Survivors	Yes	8/9.8
	No	74/90.2
Smoking Status	Yes	19/23.2
	No	63/76.8
The Employment Status	Government	48/58.5
	Service	
	Volunteer	34/41.5
Length of work	<3 years	23/28
	≥3 years	59/72

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<b>Working Area</b>	Emergency Ward	25/30.5
	Inpatient/Isolation Ward	39/47.6
	Laboratory	12/14.6
	Radiology	6/7.3
<b>Always Direct Contact With Patient</b>	Yes	60/73.2
	No	22/26.8
<b>Duration of Interaction With Patient</b>	≥ 2 hours	61/74.4
	< 2 hours	21/25.6

Based on Table 1. the mean age of the 82 respondents was 30 years old (SD ± 4,313) with an age range between 22 to 45 years. The majority are women by 73.2%. Vocational education is 57.3%. Most of married 79.3% and living in urban areas 64.6%. Respondents who have homeowners 85.4% and 93.9% live with their nuclear family and extended family. Respondents who have a history of COVID-19 survivors are 9.8% and smoking is 23.3%.

The employment status, most of the government service of 58.5% and the length of a work of over three years is 72%. With most working at the Isolation inpatient ward with 47.6%. always direct contact with patient covid-19 of 73.2% and the duration of interaction with patients more than 2 hours is 74.4%.

**Table 2. Psychological Characteristics N=82**

Category	Frequency n(%)	Criteria			
		Normal n(%)	Mild n(%)	Moderate n(%)	Severe n(%)
<b>Anxiety</b>	No	49 (59.8)	-	-	-
	Yes	33 (40.2)	47 (57.3)	3 (3.7)	23 (28)
<b>Stress</b>	No	61 (74.4)	-	-	-
	Yes	21 (25.6)	61 (74.4)	18 (22)	3 (3.7)
<b>Depression</b>	No	70 (85.4)	-	-	-
	Yes	12 (14.6)	70 (85.4)	12 (14.6)	-

Based on table 2. found an anxiety level of 40.2% with the criteria of mild 3.7%, moderate 28%, and severe 11%. has experienced stress is 25.6% with moderate criteria of 3.7% and 22% mild. the category of has experienced depression is 14.6% with mild criteria.

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**Table 3. Analysis of Predictors of Stress, Anxiety and Depression**

Predictor Variables	Anxiety		Stress		Depression	
	P-value	OR	P- value	OR	P-value	OR
Age	0.393	3.636	0.330	1.382	0.585	1.188
Gender	0.064	0.346	0.102	0.361	0.075	0.296
Education	0.790	0.798	0.432	1.696	0.235	2.100
Marital Status	0.140	2.609	0.757	1.276	0.260	2.192
Home Living Status	0.389	1.670	1.000	0.641	0.525	0.564
Residence	0.531	1.593	0.493	1.559	1.000	1.200
Living Status	0.152	0.151	0.598	0.491	0.556	0.667
Smoking Status	0.040	3.429	0.019	3.825	0.027	4.385
Has History COVID-19 Survivors	0.708	1.552	0.416	1.867	0.332	2.133
The Employment Status	0.081	2.475	0.040	3.095	0.023	5.400
Length Of Work	0.903	0.831	1.000	0.866	1.000	1.200
Working Area	0.071	2.475	0.040	3.095	0.023	4.400
Always Direct Contact With Patient	0.903	0.831	1.000	0.866	1.000	1.200
Duration of Interaction With Patient	0.588	1.502	0.939	1.236	0.067	3.667

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## DISCUSSION

### Anxiety Occurrence

The smoker is at risk of anxiety, stress, and depression of 3.429, 3.825, 4.385 times occurred with p values of 0.040, 0.019, and 0.027 means that there is a significant relationship between smoking status and anxiety, stress, and depression. The status of workers 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. The variable data that has the most influence on the occurrence of anxiety is smoking history with OR 3.429 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 of 0.021 ( $\alpha < 0.05$ ). The smokers, there are 12 experience anxiety and 7 without experience anxiety. They don't have 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 addicted, health workers who smoke cannot consume cigarettes all the time due to off the masks of possibility infected by covid-19.

Some of them do not smoke, and having an anxiety, it can be related to aspects of precipitation and other predispositions to anxiety such as biological, psychological and socio-cultural factors under the supportive concept (Rockland, & Rockland, 2015).

Covid 2019 is a direct threat to someone who does not smoke and experiences anxiety because of the impact of covid19, one of which can cause death, this 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 ( $\alpha < 0.05$ ), 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 (12) to anxiety, boredom and fear of the impact of covid-19 (Kar et al, 2020). This research is in line with research in Bangladesh 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 (smoker) are associated with anxiety with value = 0.011 ( $\alpha < 0.05$ ) (Tasnim, Sujana, Islam, Ritu, Siddique, Toma, & van Os, 2021).

### Stress Occurrence

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, primary transmission is by air way (Ministry of Health of the Republic of Indonesia, 2020).

The relationship between employment status (volunteers) they are feel afraid related to the risk of being infected, and the status of volunteers who have not received health and financial insurance from the government, causing stress (Hawari,

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2011). During the pandemic, health workers try to maintain health/immunity for themselves and their families and of course it costs a lot of money to meet needs such as vitamins, medicines, a comfortable environment to stay at home, and so on. The theory of supportive concept model that the occurrence of mental disorders because of the inability to adapt to problems that arise today and have nothing to do with the past. Biological aspects such as feeling tired, tired, health workers felt dizzy. Psychological factors: easily anxious, worried, worried about whether finances meet the needs to stay healthy. While environmental factors as demands from families and hospitals to stay healthy and have good immunity, maladaptive responses as anxiety that are not handled properly, causing stress (Nasir & Muhith, 2011; Rockland, & Rockland, 2015).

From March 2019 to December 2020, Indonesia recorded 504 health workers 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 mortality continues to increase, of course this creates stress among volunteer. 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 worry about the future of their family life.

From the results of the study, it found that the predictor factors for stress were smoking history and employment status (volunteer), each p value was 0.019 and 0.040 ( $\alpha < 0.05$ ), means that there is a significant relationship with stress. The OR values of smoker and employment status are 3,825 and 3,095, 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 volunteer is 3,095 times more at risk of stress than government service.

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 ( $\alpha < 0.05$ ).

### Depression Occurrence

48 health workers with government service status, 3 of them experiencing depression. The threat depresses the respondent, in this case Covid-19 (interpersonal theory) and the current maladaptive response (depression) according to the supportive concept.

The relationship between employment status (volunteer) and depression in this study associated with socioeconomic conditions. Economic demands during a pandemic that are not accompanied by income will become a burden for someone. Few incomes can be a source of stress, if it occurs in a long time span and improperly it can make a person depressed. The concept model of supportive therapy the cause of mental disorders are biopsychosocial factors and current maladaptive responses. Biopsychosocial factors as demands to stay healthy for both the family and the hospital without being matched by the source of income got (in this case only relying on a monthly salary with no 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; Rockland, & Rockland, 2015).

Base on the results, found that the relationship between smokers and employment status with depression was significant, with p-values of 0.027 and 0.023 ( $\alpha < 0.05$ ). Odd ratio is 4,385, so the risk of depression is 4,385 times greater than non-smokers. While the OR employment status is 5,400 meaning that the risk of depression in volunteer is 5,400 times greater than government service status.

Research in Bangladesh showed that health workers who smoker were more depressed with a correlation coefficient of 0.07 ( $\alpha < 0.05$ ). While the

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relationship between employment status and income is similar to research in Indonesia where there is a relationship between income and the level of depression of health workers with a value of value = 0.000 ( $\alpha < 0.05$ ). (Nasrullah, Natsir, Twistiandayani, Rohayani, Siswanto, Sumartyawati, & Direja, 2021; Tasnim, Sujan, Islam, Ritu, Siddique, Toma, & van Os, 2021)

## CONCLUSION

In this study, the characteristics of most of the respondents were the average age of 30 years, female, married, resident at urban areas in Bandar Lampung, with owners home status, and lived with extended/nuclear family, vocational education, government service, working for more than three years, has no history of survivors or smoker, working at inpatient or isolation ward, has contact with COVID-19 patients for over two hours a day. The most influential predictor of anxiety and stress were respondents with a smoker, while the predictor of depression was employment status..

## SUGGESTION

### Health Agencies

The healthcare workers are the spearhead of a hospital's services. Of course, the mental health. Healthcare workers who smoker has experience anxiety, stress, and depression should shift to another ward that does not cause a lot of stressors, or review the placement that they felt comfortable and safe. The volunteer who experience stress and depression should support and attention by government regarding financial assurance to meet vitamins and necessities when diagnosed with covid19. Healthcare workers are facilitated in evaluating their mental status regularly so that they can anticipate the impact of COVID-19 on the mental health of health workers.

Healthcare Workers to maintain mental health in the face of a fairly long pandemic period, of course, needs positive coping mechanisms in order to serve the community well.

## Limitations

Research during a pandemic requires maintaining health protocols, and the questionnaire carried out by electronic media which affected the comfort/privacy factor of the respondents and the results could differ from clinical findings.

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