Depression, Anxiety, and Stress due to Changes in Employment Status during COVID-19 Pandemic: A Study in Badung Districts, Bali Indonesia

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Abstract

Objective: To determine the relationship between depression, anxiety, and stress with the employment status of people in Bali during Covid-19 pandemic.

Methods: This study was a cross-sectional analytical study conducted in Bali, Indonesia, in 2021. The instrument used was DASS-21 questionnaire, which was distributed to a total sample size of 96 people. The relationship between variables were analyzed with a p-value of <0.05 as the cut-off for a significant relationship.

Results: Depression symptoms had a significant relationship with gender (p=0.024) while anxiety symptoms had a significant association with the employment status during the pandemic (p=0.027). Similarly, stress symptoms also had a significant relationship with gender (p=0.007) and employment status during COVID-19 pandemic (p=0.007).

Conclusion: There is a relationship between depression, anxiety, and stress due to changes in employment status during the COVID-19 pandemic in Badung Districts, Bali.

Keywords: Anxiety, depression, COVID-19, employment status, stress

Introduction

The novel coronavirus 2019 (COVID-19) is one of the global infections currently a pandemic in 215 countries globally, including Indonesia. Indonesia is currently ranked first as the country with the most COVID-19 cases in ASEAN, with more than 41 thousand total cases and a mortality of 5.5%.[1] As of February 2022, the number of positive cases of COVID-19 in Indonesia reached more than 5,1 million positive cases and more than 146 thousand mortality cases while Bali reached more than 146 thousand positive cases with a mortality of more than 4200 people.[2]

The COVID-19 pandemic has also had an impact on Indonesia's economic conditions, according to data from the International Labor Organization (ILO), which states that quarantine during the pandemic caused 2.7 billion workers or the equivalent of 81% of the world's workforce, to experience income imbalances.[3] This condition triggers an estimate of an increase in the number of open unemployment in 2020, which will reach 9.35 million workers.[4] Bali is a province in Indonesia that is highly dependent on tourism conditions. The COVID-19 pandemic has certainly caused instability in the tourism sector's growth due to a decrease in tourists visiting Bali. Seventy-five thousand workers have been temporarily fired and laid off, which led to an increase in Bali's unemployment rate by 5.63%.[5]

This situation will undoubtedly impact health conditions such as depression, anxiety, and stress due to decreased income. All

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individuals from various groups can feel stress conditions, ranging from school-age students who feel stress due to the distance learning system, productive age who experience stress due to employment termination, to older people who experience anxiety and depression due to limited time to socialize.[6] However, there is no descriptive or analytical data that assess the level of depression, anxiety, and stress in people in Bali and their relationship to work status during the pandemic COVID-19 in Bali, Indonesia. Therefore, this study aims to determine the relationship between depression, anxiety, and stress conditions with the work status of people in Badung Districts Bali during the Covid-19 pandemic.

Methods

This study is an analytical study with a cross-sectional design carried out during June-August 2020 to determine the relationship between individual characteristics and levels of depression, anxiety, and stress in Bali Province. This research started from proposal preparation, research implementation, data collection, and analysis to prepare a research report that lasted four months. The population in this study were all residents who live in Badung district, Bali Province. Badung was chosen as the sampling location because Badung district is the 3rd with the highest number of confirmed positive cases in Bali, representing the population.[2] There are many tourism-based economic sectors in Badung. Badung district had become the center of tourism activities in Bali, with a portion reaching 60% of the total tourists in Bali. In reviewing this, most of the businesses in Badung certainly ran in the tourism sector. As many as 85% of its citizens made a living by working in the tourism sector, and only 15% work in other sectors. It is quite representative to show changes in economic status and chances of being stressed. Based on calculations using the analytical research formula with the cross-sectional method, the minimum subject was obtained 48 people,

and in this study, 96 people were obtained as samples.

The method of selecting samples in this study uses simple random sampling. According to the inclusion criteria, all subjects previously determined are Bali province residents with the latest education, junior high school/equivalent, have reading and writing skills, and are willing to become research respondents by signing informed consent will immediately become research subjects. The data collected in this study were divided into independent and dependent variables. The independent variables are work status during the pandemic, and the dependent variable is depression score, anxiety, and stress. The sample collection was carried out by google form. The questionnaire questions use questions from the Depression Anxiety Stress Scale-21 (DASS-21), consisting of 21 questions. The results of filling out the participant questionnaire will be calculated based on the scoring according to Table 1.

All data collected will be analyzed univariate and bivariate using data analysis software. Data on numerical variables such as age and scores for depression, anxiety, and stress will be tested for normality first with the Kolmogorov-Smirnov test. Univariate data analysis is used to see the distribution description of each dependent and independent variable. Bivariate analysis of categorical data used the chi-square test. Bivariate analysis of numerical variable data with unpaired categorical uses the Mann-Whitney Test and Kruskal Wallis because the data is not normally distributed. A significant value states that there is a relationship between the dependent and independent variables if the p-value is obtained <0.05. Ethical approval for this study has been granted by the Health Research Ethical Committee, Faculty of Medicine, Udayana University, with 1836/UN14.2.2.VII.14/LT/2020.

Results

The characteristics of the research respondents in this study are in Table 2. It was found that

Table 1 Final Score Classification from DASS-21

Classification	Depression Score	Anxiety Score	Stress Score
Normal	0–9	0–7	0–14
Mild	10–13	8–9	15–18
Moderate	14–20	10–14	19–25
Severe	21–27	15–19	26–33
Extremely Severe	>27	>19	>33

Table 2 Characteristics of Research Respondents

Characteristic	Sample (n=96)	
	Frequency (n)	Percentage (%)
Respondent's age		
Mean ± sd	38.41±11.96	
Median (year)	41	
Minimum- maximum (year)	18-64	
Sex		
Male	53	55.2
Female	43	44.8
Marital status		
Not married	25	26
Married	71	74
Living status		
Main family	43	44.8
Big family	53	55.2
Latest education		
Junior high school (jhs)	3	3.1
Senior high school (shs)	66	68.8
Diploma	9	9.4
Bachelor	18	18.8
Job before pandemic		
Civil servant	5	5.2
Private employees	53	55.2
Farmer	3	3.1
Seller	11	11.5
Others	24	25.0
Job after pandemic		
Sent home for a while	24	25
Dismissal	5	5.2
Work from home	56	58.3
Still working	11	11.5
Chronic disease		
Nothing	90	93.8
Diabetes	1	1.0
Hypertension	2	2.1
Asthma	3	3.1
Smoking status		
Yes	16	16.7
Never	74	77.1
Yes before	6	6.3
Depression		
Yes	3	3.1
No	93	96.9
Anxiety		
Yes	8	8.3
No	88	91.7
Stress		
Yes	5	5.2
No	91	94.8

Table 3 Cross-tabulation between Respondent Characteristics and Depression, Anxiety and Stress Levels based on the DASS-21 Score

Characteristics		Depression Level n (%)			Anxiety Level n (%)			Stress Level n (%)	
		Normal	Mild	Moderate	Normal	Mild	Moderate	Normal	Mild
Sex	Male	53 (100)	0 (0)	0	49 (92.5)	1 (1.9)	3 (5.7)	52 (98.1)	1 (1.9)
	Female	40 (93)	2 (4.7)	1 (2.3)	39 (90.7)	1 (2.3)	3 (7.0)	39 (90.7)	4 (9.3)
Age	<39 Years old	39 (97.5)	1 (2.5)	0	36 (90.0)	2 (5.0)	2 (5.0)	39 (97.5)	1 (2.5)
	≥39 Years old	54 (96.4)	1 (1.8)	1 (1.8)	52 (92.9)	0	4 (7.1)	52 (92.9)	4 (7.1)
Marital status	Not married yet	25 (100)	0	0	23 (92.0)	0	2 (8.0)	24 (96.0)	1 (4.0)
	Married	68 (95.8)	2 (2.8)	1 (1.4)	65 (91.5)	2 (2.8)	4 (5.6)	67 (94.4)	4 (5.6)
Living status	Main family	41 (95.3)	1 (2.3)	1 (2.3)	40 (93.0)	1 (2.3)	2 (4.7)	42 (97.7)	1 (2.3)
	Big family	52 (98.1)	1 (1.9)	0	48 (90.6)	1 (1.9)	4 (7.5)	49 (92.5)	4 (7.5)
Level of education	Jhs	3 (100)	0	0	3 (100)	0	0	3 (100)	0
	Shs	69 (97.2)	2 (2.8)	0	60 (90.9)	1 (1.5)	5 (7.6)	61 (92.4)	5 (7.6)
	Diploma	8 (88.9)	0	1 (11.1)	8 (89)	1 (11)	0 (0)	9 (100)	0
	Bachelor	18 (100)	0	0	17 (94.4)	0	1 (5.6)	18 (100)	0
Employment status before pandemic	Government employees	5 (100)	0	0	4 (80)	1 (20)	0	5 (100%)	0
	Private employee	52 (98.1)	1 (1.9)	0	48 (90.6)	1 (1.9)	4 (7.5)	49 (92.5)	4 (7.5)
	Farmer	3 (100)	0	0	3 (100)	0	0	3 (100)	0
	Seller	9 (81.8)	1 (9.1)	1 (9.1)	10 (90.9)	0	1 (9.1)	10 (90.9)	1 (9.1)
	Others	24 (100)	0	0	23 (95.8)	0	1 (4.2)	24 (100)	0
Employment status during pandemic	Temporarily fired	23 (95.8)	1 (4.2)	0	24 (100)	0	0	23 (95.8)	1 (4.2)
	Work from home	55 (98.2)	1 (1.8)	0	52 (92.9)	2 (3.6)	2 (3.6)	55 (98.2)	1 (1.8)
	Laid off	5 (100)	0	0	1 (20)	0	4 (80)	2 (40)	3 (60)
	Still working	10 (90.9)	0	1 (9.1)	11 (100)	0	0	11 (100)	0
	Nothing	87 (96.7)	2 (2.2)	1 (1.1)	82 (91.1)	2 (2.2)	6 (6.7)	85 (94.4)	5 (5.6)
Chronic disease	Diabetes	1 (100)	0	0	1 (100)	0	0	1 (100)	0
	Hypertension	2 (100)	0	0	2 (100)	0	0	2 (100)	0
	Asthma	3 (100)	0	0	3 (100)	0	0	3 (100)	0
Smoking status	Never	72 (97.3)	1 (1.4)	1 (1.4)	67 (90.5)	2 (2.7)	5 (6.8)	70 (94.6)	4 (5.4)
	Stop >6 months	5 (83.3)	1 (16.7)	0	6 (100)	0	0	5 (83.3)	1 (16.7)
	Active	16 (100)	0	0	15 (93.8)	0	1 (6.3)	16 (100)	0

*JHS: Junior High School, SHS: Senior High School

Table 4 The Relationship between Respondents' characteristics and Depression, Anxiety and Stress based on the DASS-21 Score

Variable	Depression Score	P value	Anxiety Score	P value	Stress Score	P value
Gender						
Male	0.55±1.13	0.024*	1.47±2.82	0.077	1.55±3.21	0.007*
Female	1.63±3.25		2.19±3.40		3.07±4.67	
Age						
<39 years old	1.15±2.25	0.220	1.88±3.27	0.569	1.83±3.01	0.883
≥ 39 years old	0.95±2.48		1.73±3.00		2.52±4.56	
Marital status						
Not married yet	0.76±1.02	0.602	1.68±2.96	0.772	1.76±3.20	0.985
Married	1.13±2.70		1.83±3.16		2.39±4.23	
Living status						
Main family	1.23±3.03	0.906	1.74±3.17	0.451	1.84±3.33	0.818
Big family	0.87±1.69		1.83±3.07		2.55±4.45	
Level of education						
Moderate education	1.02±0.16	0.422	1.15±0.53	0.774	1.07±0.26	0.227
High education	1.07±0.38		1.11±0.42		1.00±0.01	
Work status before the pandemic						
Government employees private	0.80±1.30		1.60±3.57		1.60±1.81	
Employee	0.70±1.53	0.885	1.67±3.02	0.507	2.32±4.49	0.791
Farmer	1.67±2.88		1.00±1.73		3.00±5.19	
Seller	2.91±5.54		3.00±4.42		3.36±5.42	
Others	0.88±1.29		1.88±2.67		1.54±1.71	
Work status during the pandemic						
Sent home for a while	1.38±2.24		1.17±1.52		1.96±3.22	
Work from home	0.73±1.94	0.112	1.45±2.84	0.027*	1.34±2.77	0.007**
Dismissal	0.40±0.54		8.60±4.82		11.8±6.79	
Still working	2.09±4.36		1.82±2.75		3.00±3.89	
Chronic disease						
Nothing	1.08±2.45		1.83±3.17		2.27±4.09	
Hypertension	0.50±0.70	0.855	2.00±2.82	0.833	2.50±0.70	0.519
Asthma	0.33±0.57		1.00±1.73		1.67±2.08	
Smoking status						
Never	0.96±2.36		1.78±3.21		2.24±4.07	
Stop>6 months	2.17±3.86	0.491	2.17±2.13	0.471	4.50±5.54	0.151
Active	0.94±1.76		1.69±2.98		1.31±2.60	

the age of the patients was 13-64 years old, with an average age value of 36.46 years. The study's Respondents were dominated by male gender (55.2%) with marital status, married (74%). Based on the residence characteristics, it was found that 55.2% of the respondents lived with their big family. Most of the research respondents had the latest education level at the senior high school level/equivalent (68.8%). The work status of respondents before the COVID-19 pandemic was dominated by private employees (55.2%), while the work status of respondents during the pandemic was dominated by work from home (58.3%). Most of the respondents in this study did not have a history of chronic disease (93.8%) and had no smoking habits (77.1%). Based on the DASS-21 interpretation, it was found that three people (2.9%) had depressive symptoms, nine people (8.6%) had anxiety, and 5 (4.8%) had stress.

Table 3 presents a cross tabulation between data on characteristics and work status with depression, anxiety, and stress conditions during the covid-19 pandemic. Most of the respondents have mild depression and stress levels and have mild to moderate levels of anxiety.

The bivariate test between individual characteristic variables with depression, anxiety and stress score is presented in table 4. This study indicates that depression symptoms significantly correlate with gender (p=0.024). Anxiety symptoms have a significant relationship with work status during the pandemic (p=0.027) and stress symptoms had a significant relationship with gender (p=0.007) and work status during the pandemic (p=0.007).

Discussion

The COVID-19 pandemic caused most countries to implement social restrictions to control the virus's spread, including Indonesia. These social restrictions affect various aspects of life, such as economic conditions and education, and cause psychological impacts such as depression, anxiety, and stress.[7] This study indicates that people in Bali who have depression, anxiety, and stress symptoms are below 50%. It was found that people with depression, anxiety, and stress were 2.9%, 8.6%, 4.8%. These results are in line with Gonzales *et al*., which showed that out of 2530 study respondents, symptoms of depression, anxiety, and stress during the COVID-19 pandemic were experienced by less than 50%

of respondents 34.19%; 21.34%; 28.14%.[8] Elbay *et al*. study with 442 participants showed opposite results, there were more than 50% of respondents who experienced symptoms of depression (64.7%) and anxiety (51.6%), but respondents who experienced stress were below 50%. (41.2%).[9]

This study shows a significant relationship between depression, anxiety, and stress scores with gender and work status, but no significant relationship exists between the respondents' marital status. These results are similar to research by Elbay *et al*., that state symptoms of depression, anxiety, and stress have a significant relationship with age (p <0.001), gender (p=0.025), and job position (p= 0.001).[9] The study showed that being married and having children was associated with lower DASS-21, while unmarried and younger had higher DASS-21. Also, respondents who live with their spouses and children have lower scores than those who live alone. Regression analysis shows that female gender, unmarried status, and a history of psychiatric disorders are independent predictors for mental health deterioration.[9] Lai *et al*. also showed similar results that DASS-21 is significantly related to gender. Female respondents have a greater risk of having a risk of psychiatric disorders during the COVID-19 outbreak in China.[10]

The difference in stress response between males and females is caused by the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system, which provides negative feedback when an individual experiences stress. The sympathetic nervous system regulates heart rate and blood pressure, while HPA regulates the hormone cortisol regulation. The response of the sympathetic nervous system and HPA in men is higher than in women to influence the individual's attitude in responding to stressors. There are sex hormones in females that affect the sympathetic response and HPA. There is a decrease in negative feedback on the hormone cortisol to the brain, which causes women to have a higher tendency to experience stress.[11,12]

This study indicates that individuals laid off have more symptoms of depression, anxiety, and stress. This result is in line with Volaco *et al*. research that individuals with relatively low economic conditions have a greater chance of experiencing stress, which causes an increase in stress hormones such as cortisol and catecholamines glucagon and growth hormone.[13] Another study evaluating 108 men and 94 women showed that low economic

income individuals experience increased blood pressure and cortisol output during the workday, allowing activation of biological pathways related to stress mechanisms.[14] Worse, several reported suicide-related cases to stress due to COVID-19 are based on job loss, sudden extreme poverty, economic crisis, hunger, and inability to cope with social problems. Traumatic situations must be immediately handled through counseling and counseling to the community appropriately. A study in Bangladesh found that lockdown policies caused mental stress due to COVID-19 without ensuring the community's basic needs.[15]

Several individual characteristics associated with depression, anxiety, and stress were also explored in this study. This study found that individuals who act as students are very few who experience symptoms of depression, anxiety, or stress. This result is contrary to research by Livana *et al*., which shows that most students experience stress during the COVID-19 pandemic, which is caused by learning tasks (70.29%), the boredom of the online learning system (55.8%), and not able to meet peers (40.2%).[16] The cause of stress is reinforced by a study that states that academic stress has a significant relationship with the workload.[17] This condition shows that the COVID-19 pandemic has a negative effect on students' educational process and mental health growth.[8]

This study found that depression, anxiety, and stress symptoms were more common in individuals living with big families. Cao *et al*. show a similar result that living with parents was a factor preventing student anxiety during the pandemic (OR = 0.752, 95% CI = 0.596-0.950).[18] Multivariate analysis in the study of Gonzales *et al*. (2020) also showed that there was a significant relationship between stress scores on DASS-21 and residence status (p <0.05).[8] Individuals who live alone have greater stress symptoms than individuals who live in the same house with 2-4 family members. This condition shows that the COVID-19 pandemic has increased communication relationships and the closeness of individuals with their families so that stress symptoms are decreasing more.[8]

This study concluded that depression symptoms have a significant relationship with gender; anxiety has a significant relationship with work status during the pandemic. In contrast, stress has a significant relationship with gender and work status during the pandemic. This study has limitations in forming a cross-sectional study with a relatively small sample size compared to the total population. Therefore, it is suggested that future research use a longitudinal study design to analyze the long-term impact of the COVID-19 pandemic on an individual's psychological state to conclude the main and accompanying factors that trigger psychological symptoms in individuals. Second, this study only took a sample from Bali province, so large-scale survey with various respondents was still needed to expand and generalize the research results.

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