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, stress, and the employment status of people in Bali during Covid-19 pandemic.

Methods: This 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 an infectious disease that currently triggers a global pandemic in 215 countries, including Indonesia. Indonesia ranks first as the country with the most COVID-19 cases in ASEAN countries, with more than 41 thousand total cases and a mortality rate of 5.5% at this moment.[1] As of February 2022, the number of positive cases of COVID-19 in Indonesia has reached more than 5,1 million positive cases and more than 146 thousand deaths. Meanwhile, Bali as one of the provinces in the country has seen 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 the data from the International Labor Organization (ILO), quarantine during the pandemic has caused 2.7 billion workers, or 81% of the world's workforce, to experience income imbalances.[3] This condition is estimated to trigger 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. The COVID-19 pandemic has definitely caused instability in the tourism sector's growth due to a decrease in tourist visits. Seventy-five thousand workers have been temporarily fired and laid off, which led to an increase in Bali's unemployment rate to 5.63%.[5]

This situation will undoubtedly impact people's health conditions, including mental

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health conditions, e.g., depression, anxiety, and stress due to reduced income. All individuals can be stressed. School-age children are stressed due to the distance learning system while productive age people who experience stress due to employment termination, and the older people 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. Thus, this study aimed to determine the relationship between depression, anxiety, stress conditions, and work status of people in Badung Districts Bali during the Covid-19 pandemic.

Methods

This study was a cross-sectional analytical study performed during June-August 2020 to determine the relationship between individual characteristics, depression level, anxiety, and stress in Bali Province. This study started with research proposal preparation, which was followed with research implementation, data collection, and analysis to prepare a research report in four months. The population in this study were all residents who live in Badung district, Bali Province. Badung was chosen as the sampling location due to the fact that Badung district is the 3rd district with the highest number of confirmed positive cases in Bali, thus representing the population.[2] There are many tourism-based economic sectors in Badung, as this district has become the center of tourism activities in Bali, with a up to 60% of the total tourists in Bali visiting this district. With this situation, most businesses in Badung are linked to the tourism sector. As many as 85% of this district citizens make a living by working in the tourism sector, and only 15% work in other sectors. It is quite representative to show changes in the economic status and the possibility of being stressed during the pandemic. Based on the calculations= using the analytical research formula with the cross-

sectional method, the minimum number of subjects required for sample was 48. This study involved 96 people as samples.

The method used for sampling in this study was the simple random sampling. The inclusion criteria used in this study were Bali province residents, minimum junior high school graduate/equivalent, able to read and write, and willing to participate in the study by signing the informed consent. Variables in this study were divided into independent and dependent variables. The independent variable was work status during the pandemic, while the dependent variables were depression, anxiety, and stress scores. Data were collected through a google form. The questionnaire used in the google form was the Depression Anxiety Stress Scale-21 (DASS-21), consisting of 21 questions. Scoring was performed on the participants' responses as listed in Table 1.

Data collected were analyzed statistically using univariate and bivariate tests in a statistics software. Numerical data such as age and scores for depression, anxiety, and stress were tested for normality using the Kolmogorov-Smirnov test before further analysis was performed. Univariate data analysis was used to see the distribution of each dependent and independent variable. Bivariate analysis of categorical data was performed using the chi-square test while the bivariate analysis of numerical variable data with unpaired categorical used the Mann-Whitney Test and Kruskal Wallis as the data were not normally distributed. A significant relationship between the dependent and independent variables was represented by a p-value of <0.05. The ethical approval for this study was granted by the Health Research Ethical Committee, Faculty of Medicine, Udayana University under the ethical clearance number 1836/UN14.2.2.VII.14/LT/2020.

Results

The characteristics of the research respondents in this study are listed in Table

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 Respondent Characteristics

Characteristics	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		
Nuclear family	43	44.8
Extended 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 employee	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
Ex smoker	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	Nuclear 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)
	Extended 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
	Government employees	5 (100)	0	0	4 (80)	1 (20)	0	5 (100%)	0
Employment status before pandemic	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
	Temporarily fired	23 (95.8)	1 (4.2)	0	24 (100)	0	0	23 (95.8)	1 (4.2)
Employment status during pandemic	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 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						
Nuclear family	1.23±3.03	0.906	1.74±3.17	0.451	1.84±3.33	0.818
Extended 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	

2. It was found that the age of the patients was 13-64 years old, with an average age of 36.46 years. The study respondents were dominated by the male gender (55.2%) and married (74%). Based on the living situation characteristics, it was found that 55.2% of the respondents lived with their extended family. Most respondents had finished senior high school or equivalent (68.8%) and worked as a private employee (55.2%) before COVID-19 pandemic. Yet, during the pandemic, most respondents worked from home (58.3%). The majority of the respondents did not have a history of chronic disease (93.8%) and did not smoke. From the interpretation on the DASS-21 results, it was revealed that three people (2.9%) experienced symptoms of depression, nine experienced anxiety (8.6%), and 5 (4.8%) experienced 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 results of the bivariate test between individual characteristics, depression, anxiety and stress scores are listed in table 4. This study indicates that depression symptoms significantly correlate with gender (p=0.024). In addition, the 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 has required 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 trigger psychological impacts such as depression, anxiety, and stress.[7] This study indicates that the number of people in Bali who experience depression, anxiety, and stress symptoms during the pandemic is below 50%, i.e., 2.9%, 8.6%, 4.8% for depression, anxiety, and stress, respectively. These results are in line with Gonzales *et al*., who showed that out of 2,530 study respondents, symptoms of depression, anxiety, and stress during the COVID-19 pandemic were observed in less than 50% of respondents (34.19%, 21.34%, 28.14%, respectively).[8] In contrast, Elbay *et*

al. stated that of 442 participants, more than 50% of respondents experienced symptoms of depression (64.7%) and anxiety (51.6%). However, stress was only observed in less than 50%. (41.2%).[9]

This study has demonstrated a significant relationship between depression, anxiety, stress, gender, and work status. However, no significant relationship exists between the respondents' marital status. These results are similar to those of Elbay *et al*. that stated 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 were associated with a lower DASS-21 score while unmarried and younger presents a higher DASS-21 score. 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 link to differences in the hypothalamic-pituitary-adrenal axis, or known as the 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, which leads to 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*. who stated hat individuals with relatively low economic conditions have a greater chance of experiencing stress, which leads to 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 tend

to experience increased blood pressure and cortisol output during the workday, allowing activation of biological pathways related to stress mechanisms.[14] The condition can be so severe that the individual may have suicidal tendency, which is evident from the fact that several reported suicide-related cases due to stress during the COVID-19 pandemic are linked to job loss, sudden extreme poverty, economic crisis, hunger, and inability to cope with social problems. Traumatic situations must be immediately managed through, among others, appropriate individual or community counseling. A study in Bangladesh found that lockdown policies caused mental stress due to COVID-19 without ensuring the community's basic needs.[15]

Some individual characteristics associated with depression, anxiety, and stress were also explored in this study. This study found that only a very few students experienced 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 stated academic stress has a significant relationship with the workload.[17] This 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 demonstrated that the COVID-19 pandemic has increased communication and the closeness of individuals with their families so that stress symptoms are further decreased.[8]

This study concluded that depression symptoms have a significant relationship with gender, while anxiety has a significant relationship with work status during the pandemic. This study has limitations due to its cross-sectional design with a relatively small sample size compared to the total population. Therefore, it is suggested that future research should be done using 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 during the pandemic. Second, this study only took a sample from Bali province, so a large-scale survey with various respondents is still needed to expand and generalize the research results.

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