



Effects of the COVID-19 Pandemic on the Stress Level of Tsunami-Affected Communities Living in Temporary Housing in Palu City-Indonesia

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Abstract

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BACKGROUND: The COVID-19 pandemic has had a major impact on the socio-economic conditions and the public health in Palu. Tsunami-affected communities in the temporary housing are particularly vulnerable to COVID-19.

AIM: This study aims to examine the effects of the COVID-19 pandemic on the stress level of the tsunami-affected communities, the solutions that they adopt for dealing with this situation, and whether they obey the COVID-19 protocols in the process.

METHOD: This study used an analytical survey method and the respondents consisted of 170 households affected by the tsunami living in temporary housing in Lere, Palu City, Indonesia. The data were collected through interviews and the stress level was measured using the DASS-42. The data were then analyzed using the paired t-test and percentage.

RESULTS: The data from the DASS-42 questionnaire show that the percentages of people with mild, moderate, and severe stress were 35%, 60%, and 5%, respectively. The COVID-19 pandemic has affected the stress level of the communities living in temporary housing in Palu (losing jobs with $p = 0.002$, decreasing income with $p = 0.0016$, no job vacancy with $p = 0.0012$, reduced government assistance during the pandemic with $p = 0.000$, and uncertainty over the end of the pandemic with $p = 0.001$). Some of the strategies used to cope with this condition include socializing with neighbors (100%), working together (40%), breaking the Ramadan fast together (100%), attending congregational prayers (100%), and promoting mutual cooperation (100%). However, they did not obey the COVID-19 protocols while doing these activities as they did not wear a mask (100%), do physical distancing (100%), wash their hands (100%), and nor follow stay-at-home orders (100%).

CONCLUSION: The COVID-19 pandemic affected the stress level of the tsunami-affected communities in temporary housing in Palu, Indonesia. The solutions for dealing with this include socializing with neighbors, working together, breaking the Ramadan fast together, attending congregational prayers, and promoting mutual cooperation. These communities, however, did not obey the COVID-19 protocols.

Introduction

Palu city instituted a lockdown on March 16, 2020, to contain the virus. It has affected the socio-economic conditions and the public health in the region. The Indonesian government categorize the COVID-19 pandemic as a national disaster [1]. In general, both the government and communities place more emphasis on physical aspects in responding to the disaster, such as providing medical assistance, clothing, food, and shelter. Little attention has been paid to the psychiatric/mental/psychological aspects that lead to post-traumatic stress disorder and that are experienced during the pandemic [2], [3].

The tsunami that struck Palu on September 28, 2018 claimed 3000 lives along with their property. Those

who survived were accommodated in the temporary housing, one of which was located in the village of Lere. There were 681 people and 170 family heads living in this place. In addition to losing their property, they also experience post-traumatic stress disorder, which is hard to cure [4].

The mental conditions of the communities living in the temporary housing have not really improved. This is because they have not yet received permanent housing facilities and still feel uncertain about their future livelihoods. This situation worsens amidst the COVID-19 pandemic. The stress of COVID-19, if not dealt with seriously and professionally, can lead to mental disorders such as anxiety, depression, psychosis (severe mental disorders), and even to suicide [5], [6]. This study aimed to examine the effect of the COVID-19 pandemic on the stress level of the tsunami-affected

communities, the strategies to cope with the stress and the COVID-19 protocols being followed.

Although studies on the community stress level have been carried out, their focus is more the effects of work pressure, busyness, and the economy on the stress level of individuals. There has been no research that specifically investigates the effects of the COVID-19 pandemic on the stress level of the tsunami-affected communities in Indonesia. In particular, there is a lack of research that focuses on the conditions of the temporary housing during the pandemic.

Materials and Methods

Research design, setting dan sample

This research employed analytical survey method. It was carried out in the temporary housing of the village of Lere, Palu, Indonesia. All 681 people and 170 households in this place participated in this study. The data were gathered during the lockdown, precisely between March 23 and May 23, 2020.

The data collection techniques

The data were collected using interviews and observations. To measure the stress level of the tsunami-affected communities, the DASS-42 questionnaire was used.

The data analysis techniques

The data were analyzed using the paired t-test and percentage analysis.

Results

Socio-demographic characteristics of the respondents

This study used six socio-demographic characteristics, namely, age, occupation, income, education, number of family members, and length of stay in the temporary housing.

Table 1 shows that the people affected by the tsunami are generally aged 20–35 (56.7%). This indicates that most respondents were still young. In terms of employment, most of them work as a fisherman (88.8%) with a low income (<500,000 rupiah) (53.3%). This data suggest that the average respondents have a low, non-permanent income. Furthermore, in terms of the level of education, most of them only attended

Table 1: Respondents distribution based on the socio-demographic characteristics

Characteristics	Frequency	Percentage
Age		
<20 years	68	40.0
20–35 years	96	56.7
>35 years	6	3.3
Total	170	100
Occupation		
Fishermen	151	88.8
Entrepreneur	17	10.0
Farmer	2	1.2
Total	170	100
Income		
High (<500,000)	90	53.3
Middle (500,000–1,000,000)	40	23.3
Low (<1000,000)	40	23.3
Total	170	100
Education		
Elementary school	90	53.3
Junior high school	40	23.3
Senior high school<	40	23.3
Total	170	100
Number of Family Members		
≥2	2	1.2
<3	168	98.8
Total	170	100
Length of Stay in the Temporary Housing		
<1 year	2	1.2
1 year 8 months (since the tsunami on September 28, 2018)	168	98.8
Total	170	100

elementary school education (53.3%), meaning that they have low education. Meanwhile, 98.8% of all respondents have families with three members, meaning that on average these respondents live with many family members. Meanwhile, the majority of them (98.8%) have stayed in the temporary housing for 1 year and 8 months since the tsunami on September 28, 2018. This data show that in general they have been living in the temporary housing for quite a long time.

The effects of the COVID-19 pandemic on the stress level of the tsunami-affected communities

Table 2 shows the percentage of respondents according to their stress level. The majority of the respondents (60%) experienced moderate level of stress while only 5% suffered from severe level of stress.

Table 2: Percentage of respondents based on the stress level

Stress level	f	%
Mild	60	35
Moderate	84	60
Severe	26	5
Total	170	100

Table 3 shows the statistical test results in which losing jobs during the pandemic is correlated with the stress level of the tsunami-affected communities, with $p = 0.002$. It is also the case for other factors, namely, decreasing income, no job vacancy, reduced government assistance during the pandemic, and uncertainty over the end of the pandemic which, respectively, obtain p-values of 0.0016, 0.012, 0.000, and 0.001 ($p < \alpha 0.05$). It can be concluded that these variables affected the stress level of the communities.

Table 3: The effects of the COVID-19 Pandemic on the stress level of the tsunami-affected communities living in the temporary housing

Effects of the Covid-19 pandemic	Stress						p value
	Mild		Moderate		Severe		
	F	%	F	%	F	%	
Losing jobs							0.002
Yes	16	26.6	52	61.9	14	53.8	
No	44	73.4	32	38.1	12	46.2	
Total	60	100	84	100	26	100	
Decreasing income							0.0016
Yes	34	56.6	54	64.3	13	50	
No	26	43.4	30	35.7	13	50	
Total	60	100	84	100	26	100	
No job vacancy							0.0012
Yes	41	68.3	49	58.3	14	53.8	
No	19	31.7	35	41.7	12	46.2	
Total	60	100	84	100	26	100	
Reduced government assistance							0.000
Yes	39	65	66	78.6	14	53.8	
No	21	35	18	21.4	12	46.2	
Total	60	100	84	100	26	100	
Uncertainty over the end of pandemic							0.001
Yes	37	61.7	57	67.8	15	57.5	
No	23	38.3	27	32.2	11	42.3	
Total	60	100	84	100	26	100	

Strategies for coping with stress

Table 4 shows that the strategies that these respondents used to cope with stress were socializing with neighbors (100%), breaking the Ramadan fast together (100%), attending congregational prayers (100%), promoting mutual cooperation (100%), and working together (40%). It indicates that they did not obey the COVID-19 protocols.

Table 4: Analysis of the respondents based on their strategies for coping with stress

Coping with stress	f	%
Socializing with neighbors	170	100.0
Working together	68	40.0
Breaking the Ramadan fast together	170	100.0
Attending congregational prayers	170	100.0
Promoting mutual cooperation	170	100.0

The COVID-19 protocols

Table 5 indicates that the tsunami-affected communities living in the temporary housing did not obey the COVID-19 protocols because they did not wear a mask, do physical distancing, wash their hands nor follow stay-at-home orders.

Table 5: Analysis of the respondents in relation to the COVID-19 protocols

Preventive actions	f	%
Did not wear a mask	170	100.0
Did not do physical distancing	170	100.0
Did not stay at home	170	100.0
Did not wash hands	170	100.0

Discussion

The effects of the COVID-19 pandemic on the stress level

Based on the statistical analysis of the respondents' stress level, it was found that the majority

of them experienced moderate level of stress (60%), followed by those with mild stress (35%) and severe stress (5%). Most of the respondents who suffered from moderate stress cited some factors contributing to their stress level, namely, reduced government assistance during the pandemic (78.6%), uncertainty over the end of the pandemic (67.8%), decreasing income (64.3%), losing jobs (61.9%), and difficulty to find job vacancies (58.3%). This is in line with an argument [7], [8] that the majority of the victims of a disaster, such as COVID-19, will suffer from relatively severe stress and anxieties with regard to fulfilling their daily needs such as food and medicine. Furthermore, some studies have also found that there is a relationship between COVID-19 and the stress level. Their findings indicate that the pandemic has made people lose jobs which, in turn, make them stressful [9]; changes in the economic status of the communities due to COVID-19 significantly contribute to the individuals' psychological conditions [8]; and job loss raises feelings of helplessness and stress because they cannot meet family needs [10].

Any disasters including the COVID-19 pandemic and disasters caused by human actions such as technological disasters, mass violence, and famine have a very significant impact on changes in physical, psychological, social, and economic aspects of human life [10], [11].

Statistical test results show that job losses due to the pandemic affected the stress level of the tsunami-affected communities ($p = 0.002$). This is because they want to fulfill the daily needs but are unable to do so because they do not have any jobs. This finding is in line with a research result [12] showing that unemployed people have higher rate of anxiety and depression. Losing a job will cause anger and depressive symptoms for everyone. These findings indicate that interventions to help tsunami-affected communities who lost their jobs become a solution to prevent stress [13].

The COVID-19 pandemic decreased the income of the respondents ($p = 0.0016$). This is probably because some of them have lost their jobs and is unable to do innovations due to the limited access they have during the pandemic. The decrease in their income is the main trigger which has a negative impact on their mental health. Most studies note that increasing unemployment, reducing staff, and reducing wages are associated with increased rates of mood, anxiety, depression, dystrophyia, and suicide [14]. The COVID-19 pandemic mediates the relationship between financial pressures and stress symptoms that occur [15].

The difficulty of finding job opportunities during the pandemic affected the stress level of the respondents ($p = 0.0012$). This condition is related to the income level of the communities. This is in accordance with a research result [16] showing that the inability of job seekers to find job openings will contribute to their deteriorating health. A number of

factors are associated with high stress levels, including one of which is the difficulty of getting a job [17]. This is an important finding related to the impact of the COVID-19 pandemic on tsunami-affected communities that may be a reference for the government in creating jobs, especially those related to creative industries in the temporary housing.

Reduced government assistance affected the respondents' stress level ($p = 0.00$). Numerous studies show that government social support is very important to maintain the physical and psychological health of the communities. Government social support can reduce their susceptibility to the stress. Food aid from the government such as rice and side dishes can fulfill their daily needs so that their burden will be reduced which then affects their central oxytocin hormone [18]. Helping others can specifically prevent someone from becoming stressful [19].

Uncertainty over the end of the pandemic affected the respondents' stress level ($p = 0.002$). Individuals with high intolerance to uncertainty are more likely to perceive a pandemic as a threat and are also more likely to use coping strategies that focus on emotions. Both of these factors increase a person's stress level. The uncertainty about when the pandemic ends has implications for physical health and psychological distress [12], [20]. The body's immunity, which is very important for dealing with stress during the coronavirus pandemic and certainty about when the pandemic ends are some of the urgent needs that can help us to increase our resilience [21], [22].

Strategies for coping with stress

The findings show that all respondents coped with stress by socializing with neighbors, working together, breaking the Ramadan fast together, attending congregational prayers, and promoting mutual cooperation. These coping strategies are at odds with the COVID-19 protocols. This happens because there is a general belief or a culture that if a disaster occurs, people will panic. However, the response to the COVID-19 outbreak was different because it actually increased cooperation and orderly behavior according to the norm. The concept of panic has shifted to focus on how people work together rather than having to compete in the face of crises, the emergence of a shared identity, and concern for others by bringing up shared experiences of dealing with problems. A strong sense of shared social identity will help coordinate efforts to manage threats and foster commitment in the group and adherence to norms [23], [24].

These findings are in line with an article [25] about how to cope with stress using problem-focused coping and seeking social support in the form of information, real, and emotional supports. In this

case, the respondents did many activities together such as socializing with neighbors, promoting mutual cooperation, and attending congregational prayers as a coping mechanism. The major finding of this study is that people in the temporary housing coped with their stress during the pandemic with strategies that were at odds with the COVID-19 protocols.

COVID-19 preventive measures

The statistical test results show that most respondents did not obey the COVID-19 protocols. This is because the majority of them believe that they have a strong immune system as a result of bathing in the sea. In addition, they also assume that they are a big family that has never been visited by outsiders or foreigners. In fact, judging from their homes and sanitation, they are among the vulnerable groups who can be infected by the coronavirus. Their houses are attached to each other, with an area of only 2×3 meters inhabited by an average of 4–5 people. Seeing this condition, they should be more disciplined in complying with the COVID-19 protocol.

This condition can certainly help maintain their mental health. Efforts to recover from psychological shocks or unfavorable conditions require an ability known as resilience [8]. Resilience is the ability of individuals to respond and deal positively with unpleasant conditions, do something to strengthen themselves, and rise from adversity, which is seen as something that can be overcome [26]. Resilience is closely related to individual coping strategies. This is in accordance with the argument [27] that the level of resilience is related to the ability to manage stress and emotions and choose certain coping strategies to overcome problems that arise even though it is not always in accordance with general norms that must be obeyed. Their reluctance to comply with the COVID-19 protocols is related to a specific coping strategy, namely, efforts that involve cognitive, emotional, and behavioral aspects to control and reduce problems that can cause stress [28].

Conclusion

The COVID-19 pandemic affected the stress level of the tsunami-affected communities living in temporary housing in Palu, Indonesia. They used some strategies to cope with their stress such as by socializing with neighbors, attending congregational prayers, and promoting mutual cooperation. However, they did not follow the COVID-19 protocols such as wearing a mask, physical distancing, hand washing, and staying at home.

Author Contribution

RosmalaNur (conceptualizing and designing the study, preparing the manuscript draft, doing revisions or providing critique), Muh.Ryman Nafirah (sectional scientific management), Ulfa (analyzing and interpreting the data) Vidiyanto (analyzing and interpreting the data), MuthiaAryuni (analyzing and interpreting the data) Syaiful Hendra (sectional scientific management); Hajra Rasmita Ngemba (data analysis and interpretation); Muh. Rusydi, H (sectional scientific management);

Significance Statement

This study found that the COVID-19 pandemic affected the stress level of tsunami-affected communities living in temporary housing in Palu, Indonesia. The strategies for coping with this stress were socializing with neighbors, working together, breaking the Ramadan fast together, attending congregational prayers, and promoting mutual cooperation. However, these communities did not obey the COVID-19 protocols.

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