



FACTORS RELATED TO THE LEVEL OF ANXIETY OF PEOPLE IN LANDSLIDE-PRONE AREAS IN PARONGPONG DISTRICT

Syifa Nur Atiyah, Gilny Aileen Joan

Universitas Advent Indonesia

syfyewon@gmail.com

ABSTRACT

Keywords:

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Natural disasters, such as landslides, can cause significant psychological impacts, such as anxiety. Anxiety is a mental disorder characterized by feelings of fear, worry, restlessness, and physical symptoms such as increased blood pressure, trembling, and headaches. This study aims to identify the factors that influence the level of anxiety among communities in landslide-prone areas, particularly in the Parongpong District, West Bandung Regency. The study uses a quantitative correlational method with a cross-sectional approach. The research population consists of the community in Parongpong District, with a sample of 70 individuals selected using purposive sampling techniques. The variables analyzed include age, gender, educational background, experience of being affected by a disaster, disaster training, and length of residence. The analysis of 70 respondents with diverse characteristics (26 males and 44 females) shows that most respondents experience mild anxiety, with an average score of 6 on the GAD-7 scale. Of the respondents, 49 (70%) experienced mild anxiety, 16 (22.8%) experienced moderate anxiety, 1 (1.4%) experienced severe anxiety, and 4 (5.7%) did not experience anxiety. Factors such as age, gender, educational background, experience of being affected by a disaster, disaster training, and length of residence did not show a significant relationship with the level of anxiety ($p > 0.05$). These findings are consistent with previous research that shows the psychosocial impacts of landslides, but with relatively low anxiety levels in the Parongpong District.

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INTRODUCTION

Natural disasters are a series of events that threaten or disrupt people's lives due to natural, non-natural, or human factors, which cause casualties, environmental damage, property losses, and psychological impacts (Law of the Republic of Indonesia No. 24 of 2007). The disaster can be in the form of earthquakes, floods, or landslides. Landslides themselves are the movement of soil and materials on it with large volumes in a lower direction (Gerungan & Mahardhika, 2020; Undang-Undang Republik Indonesia Nomor 24 Tahun 2007 Tentang Penanggulangan Bencana, 2007).

The impact of natural disasters such as landslides is not only physical, but also psychological, where affected people often experience anxiety. This anxiety is characterized by fear and worry, as well as physical symptoms such as increased blood pressure, tremors, and headaches (Mamesah et al., 2018). Anxiety itself is a psychiatric disorder that is influenced by biological, psychological, and psychosocial factors, with factors such as age, education, gender, and work playing a role in determining the level of anxiety that arises (Blanch & Barkus, 2021; Gilboa et al., 2019; Müller et al., 2022; Pihkala, 2020; Warnek, 2021).

The Parongpong area in West Bandung Regency is one of the areas that is vulnerable to natural disasters, especially earthquakes and landslides. In 2019, this region, including Parongpong and Lembang, experienced 14 landslides that endangered the safety of residents. The high frequency of landslide events in Parongpong shows

that the region has a significant level of vulnerability to natural disasters, thus putting psychological pressure on the people living there.

People living in landslide-prone areas face not only physical dangers but also significant psychological challenges, particularly anxiety. In areas such as Parongpong District, where landslides occur frequently, residents are exposed to long-term psychological stress. However, the relationship between personal and environmental factors—such as age, gender, education, disaster experience, and training—with anxiety levels remains poorly understood, making it difficult to design effective mental health interventions.

The urgency of this research is underscored by the rising frequency of landslides in West Bandung, which has led to increased mental health concerns, particularly among communities living in high-risk zones. Despite this, disaster response strategies have largely focused on physical infrastructure and early warning systems, with minimal attention given to psychosocial impacts and mental health preparedness.

Moreover, in disaster-prone communities, anxiety can significantly affect resilience, decision-making, and long-term well-being. Without accurate data on anxiety levels and contributing factors, policymakers and disaster mitigation agencies cannot develop targeted psychological support or community-based resilience programs. This research is critical to bridge that gap and to ensure a more holistic approach to disaster preparedness.

Research conducted by Mamesah in Ronomuut Village, Manado City, revealed that the majority of residents living in landslide-prone areas experienced anxiety, with details of 25.6% experiencing mild anxiety, 51.1% experiencing moderate anxiety, and 18.6% experiencing severe anxiety, while only 4.7% did not experience anxiety (Mamesah et al., 2018). Another study by Kurnia Suci Arta and Eska Dwi Prajayanti also found that the elderly in landslide-prone areas tended to experience mild to moderate anxiety, with 41% experiencing mild anxiety, 26.5% moderate anxiety, and 12.8% severe anxiety.

Other research also supports these findings, where Ferdinand, Wijayanti, and Wibowo (2019) show that landslides have significant psychosocial impacts, with anxiety as the dominant psychological symptom. Similar research by Solomon, Gelkopf, and Bleich (2016) also showed that long-term exposure to the threat of natural disasters, such as landslides, has the potential to increase the risk of anxiety and depression, especially for people who repeatedly face such threats. In addition, Desai, Goyal, and Mehta (2018) note that uncertainty regarding future disaster threats can exacerbate anxiety, while Yabe, Sekimoto, and Ukkusuri (2020) highlight the importance of access to information and social support in reducing anxiety in disaster-prone areas. Community resilience through strong social networks has also been shown to lower post-disaster anxiety levels (Clark-Ginsberg et al., 2020; Melendez et al., 2022; Olcese et al., 2024; E. Yang et al., 2021; Q. Yang et al., 2021). However, although many studies have examined the psychological impact of natural disasters, there is still a gap in understanding the specific factors that affect anxiety in different groups of people in disaster-prone areas.

Although there has been a lot of research on anxiety due to natural disasters, there is still a gap in understanding the specific factors that affect anxiety levels in various groups of people living in disaster-prone areas. Most previous studies have only addressed common factors such as age, gender, and education level, but have not explored the role of local characteristics such as length of stay in vulnerable areas, experience affected by disasters, or availability of disaster mitigation training. In addition, the unique geographical and social context in the Parongpong area, West Bandung Regency, which is known for its high frequency of landslides, has not been sufficiently investigated in relation to the level of community anxiety. Therefore, this study aims to identify factors related to the level of anxiety of people in landslide-prone areas, especially in Parongpong District. By filling this gap, it is hoped that this research can make a significant contribution to efforts to address the mental health of people in disaster-prone areas and provide recommendations that can be used by local governments in designing more effective interventions based on local needs.

While previous research confirms that natural disasters affect mental health, few studies explore the role of demographic, experiential, and educational factors simultaneously in shaping anxiety levels. Specifically, no study has comprehensively analyzed these variables in the context of West Bandung's Parongpong District—a region with a high frequency of landslides. This study addresses that gap through a correlational approach, aiming to identify which factors most influence anxiety in such environments.

This research is novel in its use of a validated psychological instrument (GAD-7) to quantify anxiety and its integration of six independent variables—gender, age, education, disaster experience, disaster training, and

duration of residence—within a single analytical model. It also contributes unique data from the understudied region of Parongpong, offering new insights into community mental health in disaster-prone areas.

The objective of this study is to identify and analyze factors related to the anxiety levels of residents in landslide-prone areas, specifically in Parongpong District, West Bandung Regency, by examining the correlation between demographic and experiential variables and the severity of anxiety as measured by the GAD-7 scale.

This study benefits local governments, disaster response teams, and mental health professionals by providing data-driven insights into community anxiety in disaster-prone areas. The findings can guide the design of targeted interventions, such as community training, psychosocial support programs, and integrated disaster mitigation strategies that address both physical safety and mental well-being.

METHOD

This research is a quantitative correlational study with a cross-sectional approach. The study aims to examine the relationship between anxiety levels and various demographic and experiential factors among residents in landslide-prone areas of Parongpong District. The cross-sectional design involves collecting data at a single point in time without intervention, using statistical analysis to determine relationships between one dependent variable (anxiety level) and six independent variables: gender, age, educational background, disaster experience, disaster training, and length of residence. The minimum required sample size, based on the rule of thumb (10 participants per variable), is 70 participants. A purposive sampling method was used to select respondents who met inclusion criteria such as living in the area for at least one year, being aged 12–79, having disaster experience or risk exposure, and being able to read and understand Indonesian. Exclusion criteria included severe mental illness, current intensive psychiatric treatment, communication barriers, or refusal to give consent.

Data collection utilized the Generalized Anxiety Disorder Questionnaire (GAD-7) and a demographic data sheet. The GAD-7 is a standardized instrument used to assess generalized anxiety symptoms over the past two weeks, with seven items rated on a 4-point Likert scale. Scores range from 0 to 21 and are categorized into mild (5–9), moderate (10–14), and severe anxiety (>15). This instrument is validated and reliable, with a Cronbach's alpha coefficient of 0.895. The demographic data sheet collected participant information including gender, age, education, length of residence, and disaster-related experience and training. These instruments ensure the accuracy and relevance of the data related to anxiety and its potential predictors in the study population.

The data collection procedure included several steps to ensure ethical compliance and logistical readiness. First, the study was submitted for ethical review and approved by the university's ethics committee. Second, research permits were obtained from the university, followed by formal approval from local authorities in Parongpong District. Researchers then identified the study sites, prepared materials, and scheduled visits. During data collection, respondents were informed about the study and asked to sign an informed consent form. Questionnaires were administered under the supervision of the researcher to ensure clarity and completeness of responses.

RESULTS AND DISCUSSION

Overview of Anxiety Levels

Based on the results of data obtained from 70 people in Parongpong District who live in landslide-prone areas, it was found that the average level of anxiety experienced by people living in landslide-prone areas in Parongpong District is 6 which means the level of mild anxiety with the lowest score being 0 which means not experiencing Anxiety, and the highest score of 15 which means Severe Anxiety Level. With 49 respondents experiencing mild anxiety (70%), 16 respondents experiencing moderate anxiety (22.8%), 1 respondent experiencing severe anxiety (1.4%), and 4 respondents not experiencing anxiety (5.7%).

The Relationship of Age to Anxiety Levels

Table 1. The relationship between age and anxiety levels

Correlations			
		Age	Anxiety Level
Age	Pearson Correlation	1	.115
	Sig. (2-tailed)		.342
	N	70	70
Anxiety Level	Pearson Correlation	.115	1
	Sig. (2-tailed)	.342	
	N	70	70

Based on data obtained from 70 people consisting of 1 Early Adolescent, 10 Young Adult, 13 Early Adult, 23 Middle Adult, 16 Late Adult, 7 Early Elderly, 1 Middle Elder. It was found that the value of Sig. (2-tailed) was $0.342 > 0.05$. It can therefore be concluded that there is no correlation between age and anxiety levels.

Sex Relationship with Anxiety Levels

Table 2. Sex relationship with anxiety levels

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	14.568a	15	.483
Likelihood Ratio	16.959	15	.321
Linear-by-Linear Association	1.602	1	.206
N of Valid Cases	70		
a. 30 cells (93.8%) have expected count less than 5. The minimum expected count is .37.			

From the data obtained, the respondents in this study consisted of 26 male respondents and 44 female respondents. The Asymptotic Significance (2-sided) value was $0.483 > 0.05$. And the chi square value was calculated as $14.568 < 24.995790$ (chi square table). It can therefore be concluded that there is no correlation between sex and anxiety levels.

The Relationship between Education Level and Anxiety Level

Table 3. The relationship between education level and anxiety levels

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	58.960a	60	.514
Likelihood Ratio	69.981	60	.177
Linear-by-Linear Association	.616	1	.433
N of Valid Cases	70		
a. 80 cells (100.0%) have expected count less than 5. The minimum expected count is .04.			

The respondents found consisted of 29 Respondents with an Elementary Education background, 16 Respondents with a Junior High Education background, 19 Respondents with a high school education background, 2 Respondents with a DIII Education background, and 4 Respondents with a S1 Education background. The Asymptotic Significance (2-sided) value was $0.514 > 0.05$. And the chi square value was calculated as $58.960 < 79.081944$ (chi square table). Therefore, it can be concluded that there is no correlation between educational background and anxiety levels.

Old Relationships Domiciled with Anxiety Levels

Table 4. Old relationships domiciled with anxiety levels

Correlations				
			Domicile period	Anxiety Level
Spearman's rho	Domicile period	Correlation Coefficient	1.000	-.231
		Sig. (2-tailed)	.	.055
		N	70	70
	Anxiety Level	Correlation Coefficient	-.231	1.000
		Sig. (2-tailed)	.055	.
		N	70	70

Of the 70 respondents who live in Parangpong District, there are 2 old respondents who are <5 years old, 12 old respondents who are between 6-10 years old, 13 old respondents who are between 11-20 years old, and 43 old respondents who are >20 years old. Because the data from Lama domiciled is not distributed normally, the test used is Spearman. Sig. (2-tailed) value $0.055 > 0.050$. Therefore, it can be concluded that there can be no correlation between the length of residence and the level of anxiety.

The Relationship of Disaster Training to Anxiety Levels

Table 5. The relationship between disaster training and anxiety levels

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.356a	15	.727
Likelihood Ratio	14.519	15	.487
Linear-by-Linear Association	2.587	1	.108
N of Valid Cases	70		
a. 30 cells (93.8%) have expected count less than 5. The minimum expected count is .24.			

Respondents who have Disaster Training or Counseling Experience consist of 17 Respondents have disaster training experience and 53 Respondents do not have Disaster Training or Counseling experience. The Asymptotic Significance (2-sided) value was $0.727 > 0.05$. And the chi square value was calculated as 11.356 < 24.995790 (chi square table). It can therefore be concluded that there is no correlation between the experience of disaster training and the level of anxiety.

The Relationship between Disaster-Affected Experiences and Anxiety Levels

Table 6. The relationship between the experience of being affected by a disaster and anxiety levels

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.543a	15	.638
Likelihood Ratio	15.572	15	.411
Linear-by-Linear Association	3.931	1	.047
N of Valid Cases	70		
a. 30 cells (93.8%) have expected count less than 5. The minimum expected count is .36.			

Another study in Nepal found that anxiety and other mental disorders remain a serious problem years after the disaster, with social support that can help reduce anxiety and depression among survivors. (Luce et al., 2022)

Discussion of Research Results

Based on data obtained from 70 respondents living in landslide-prone areas in Parongpong District, consisting of 26 male respondents and 44 female respondents have an average value of 6 which means the level of mild anxiety with the lowest score being 0 which means not experiencing anxiety, and the highest score of 15 which means the level of severe anxiety. 49 respondents experienced mild anxiety (70%), 16 respondents experienced moderate anxiety (22.8%), 1 respondent experienced severe anxiety (1.4%), and 4 respondents did not experience anxiety (5.7%). These results show that people living in landslide-prone areas in the Parongpong District area have a level of anxiety that tends to be mild. This finding is in line with research conducted by Mamesah et al. (2018) in Ronomuut Village, Manado City, revealing that the majority of residents living in landslide-prone areas experience anxiety. Other research also supports these findings, where Ferdinand, Wijayanti, and Wibowo (2019) show that landslides have significant psychosocial impacts, with anxiety as the dominant psychological symptom.

Based on Age, the Respondents consisted of 1 Early Adolescent, 10 Young Adult, 13 Early Adult, 23 Middle Adult, 16 Late Adult, 7 Early Adult, 1 Middle Adult. Which if connected with the level of anxiety, it was found that the Sig. (2-tailed) value was $0.342 > 0.05$ which means that there is no relationship between age and the level of anxiety. In line with Kurnia Suci Arta's research on the level of anxiety among the elderly, in her research it was found that most of the elderly in her study experienced mild anxiety. This is because the older you get, the more mature a person's psychology is, so that a person will be better able to adapt to anxiety (Mamesah et al., 2018).

For Gender, when linked to Anxiety Level, it was found that the value of Asymptotic Significance (2-sided) was $0.483 > 0.05$. And the chi square value was calculated as $14.568 < 24.995790$ (chi square table) which means that there is no relationship between Gender and Anxiety Level. Although the results showed no correlation between gender and anxiety levels, moderate to severe anxiety levels were experienced by female respondents. This is because women are more prone to anxiety because women are more sensitive while men are more exploratory (Mamesah et al., 2018).

The respondents found consisted of 29 Respondents with an Elementary Education background, 16 Respondents with a Junior High Education background, 19 Respondents with a high school education background, 2 Respondents with a DIII Education background, and 4 Respondents with a S1 Education background. The Asymptotic Significance (2-sided) value was $0.514 > 0.05$. And the chi square value was calculated as $58.960 < 79.081944$ (chi square table). Therefore, it can be concluded that there is no correlation between educational background and anxiety levels. These findings are consistent with the results of other studies that show that education can help individuals develop better skills and strategies in managing stress and anxiety (Niemeyer et al., 2019).

Of the 70 respondents who are domiciled in Parongpong District, there are 2 long-term respondents who are <5 years old, 12 long-term respondents who are between 6-10 years old, 13 long-term respondents who are between 11-20 years old, and 43 long-term respondents who are >20 years old. Because the data from Lama domiciled is not distributed normally, the test used is Spearman. Sig. (2-tailed) value $0.055 > 0.050$. Therefore, it can be concluded that there can be no correlation between the length of residence and the level of anxiety. Although the research conducted Surya et al. (2022) shows that there is a significant relationship between length of stay and the level of anxiety with a strong relationship and a negative relationship direction, namely where the shorter the year of stay, the more risk of anxiety, this was not confirmed in respondents in Parongpong District.

Respondents who have Disaster Training or Counseling Experience consist of 17 Respondents have disaster training experience and 53 Respondents do not have Disaster Training or Counseling experience. The Asymptotic Significance (2-sided) value was $0.727 > 0.05$. And the chi square value was calculated as $11.356 < 24.995790$ (chi square table). It can therefore be concluded that there is no correlation between the experience of disaster training and the level of anxiety. Although research conducted by Tri Rahmawati & Ika Silvitasari found that there is a relationship between disaster preparedness and anxiety levels where the level of disaster preparedness is higher in people who have participated in training or counseling related to disasters, than in people who have not participated in disaster training or counseling. If the community's preparedness is more prepared, the level of anxiety experienced will be reduced.

CONCLUSION

This study aims to identify factors that affect the level of anxiety of people in landslide-prone areas, especially in Parongpong District, West Bandung Regency. The results of the analysis of 70 respondents with diverse characteristics (26 males and 44 females) showed that most of the respondents experienced mild anxiety, with an average score of 6 on the GAD-7 measuring instrument. The details are as follows: 49 respondents experienced mild anxiety (70%), 16 respondents experienced moderate anxiety (22.8%), 1 respondent experienced severe anxiety (1.4%), and 4 respondents did not experience anxiety (5.7%). These results indicate that although Parongpong is in an area with a high risk of landslides, the level of community anxiety is relatively mild. Age, Gender, Education Level, Disaster Affected Experience, Disaster Training and Length of Domicile had no correlation with Anxiety Level.

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