

## Original Article

# The Correlation Between Resilience Levels and Disaster Preparedness Among Students at SMP Negeri 26 Jakarta Regarding Flood Disasters

Fakaruddin Wahyu<sup>1\*</sup>, Cahyadi Setiawan<sup>1</sup>, Ode Sofyan Hardi<sup>1</sup>

<sup>1</sup>Department of Geography Education, Faculty of Social Sciences, Universitas Negeri Jakarta, Jakarta, Indonesia

\*corresponding e-mail: [fakarwahyu12@gmail.com](mailto:fakarwahyu12@gmail.com)

### ABSTRACT

*This study investigates the relationship between resilience levels and disaster preparedness among students. Utilizing a descriptive quantitative method with a correlational approach, the research focused on 83 students from SMP Negeri 26 Jakarta who had experienced flooding. The results revealed a non-zero correlation coefficient, indicating a significant relationship between resilience and disaster preparedness. Specifically, the correlation coefficient of 0.454 demonstrates a positive association, suggesting that greater resilience is linked to enhanced disaster preparedness. The analysis categorized the resilience levels of students who faced flooding as high to very high, which aligned with their disaster preparedness levels, predominantly classified as ready to very ready. This study highlights the importance of fostering resilience in students to improve their preparedness for future disasters, emphasizing the need for educational interventions that enhance both resilience and readiness among young individuals in disaster-prone areas.*

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### KEYWORDS

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## INTRODUCTION

Indonesia is highly vulnerable to disasters due to its location at the convergence of tectonic plates and along two active mountain ranges (Subekti, 2019; Adiyoso, 2018; Djalante et al., 2017). According to the World Risk Index, Indonesia ranks 40th globally (Behlert, 2020). Adiyoso (2018) stated that 20% of Indonesia's land area

is flood-prone. Data from BNPB (2020) recorded approximately 1,070 flood events, accounting for 36.41% of all disasters in Indonesia, while floods also dominate disaster occurrences in Asia and globally (ADRC, 2020). Climate change has been identified as one of the contributing factors to the increasing frequency of floods.

DKI Jakarta is one of the regions prone to flooding, with topography that forms a flood basin lying below sea level (Prasasti et al., 2015). Rustiadi (2013) added five other factors contributing to flooding in Jakarta: poor drainage systems, Jakarta's location below sea level, extreme rainfall, waste accumulation, and land subsidence. These conditions are exacerbated by global climate dynamics (Prasasti et al., 2015; Rustiadi, 2013; BPLHD, 2008).

Kampung Melayu is one of the areas in Jakarta that is highly prone to flooding, where five out of ten *Rukun Warga* (RW) frequently experience floods due to the overflow of the Ciliwung River from upstream. Kampung Melayu has a population of 31,026 people divided into 10,171 households. Most of the flooding in this area is caused by the overflow of the Ciliwung River due to high water discharge from upstream areas. Demographically, Kampung Melayu's population of 31,026 people is divided into 10,171 households. Residents of Kampung Melayu are spread across 106 *Rukun Tetangga* (RT) and nine RW, with RW 08 being the largest, housing 4,735 people, while RW 09 has the smallest population of 2,262 people (Kampung Melayu Monograph Data, 2021).

Flooding can cause material damage, psychological distress, and even loss of life. However, these impacts can be reduced through disaster preparedness. The concept of disaster preparedness refers to a series of actions taken before a disaster occurs, consisting of effective preventive measures to ensure efficiency, timeliness, good organization, response delivery, relief distribution, and targeted aid (Adiyoso, 2018; Coppola, 2007). Preparedness is a form of anticipation and disaster risk reduction as part of the disaster management mechanism. Preparedness is a proactive element in disaster risk reduction and part of the disaster management process (UNESCO/ISDR and LIPI, 2006; Erchanis, 2019).

The Disaster Management Law explains that preparedness is a series of preparatory actions and activities to anticipate disaster threats, whether by individuals, groups, or communities, aiming to protect lives through well-organized, efficient, and effective planning (Law No. 24 of 2007). LIPI and UNESCO (2006) identified five parameters to measure disaster preparedness. However, for individuals, only four parameters are used: emergency response planning, knowledge and attitudes, warning systems, and resource mobilization. The fifth parameter, policies and guidelines, is used to measure institutions, including families (UNESCO/ISDR and LIPI, 2006).

Students, especially children and adolescents, are considered vulnerable groups during disasters due to their still-developing physical and emotional conditions, which make them susceptible to psychological trauma, such as anxiety, sleep disturbances, and fear (Sarwono, 2016). However, proper support can help them adapt and improve their resilience (Ginting, 2017). Resilience is defined as the ability to recover from life stresses, including disasters, and return to a normal state (Vanbreda, 2001, in Hendriani, 2018). Resilience helps individuals cope with difficulties and recover from adverse experiences. Mohammadinia et al. (2019), in their study, stated that resilience essentially relates to an individual's ability to protect themselves, solve problems, and return to normal conditions (Mohammadinia et al., 2019). Luthar (2003), in Coleman and Hagell (2007), stated that two factors shape resilience in a person: the experiences they have gone through, including hardships or problems in life, such as disasters, and their recovery from those experiences (Coleman, 2007).

Resilience plays an important role in helping individuals adapt to traumatic events, including natural disasters. Research conducted by Pattipeilohy et al. in 2019 in Batu Merah Village, Ambon City, revealed that communities experiencing flooding exhibited high levels of resilience. This study shows that disaster events affect a person's level of resilience. Another study also found indications of a correlation between resilience and disaster preparedness, as revealed by Erchanis (2019) in a study of resilience and family preparedness in coastal areas of Sumur Subdistrict. The study showed that resilience levels influence disaster preparedness, where families with high resilience tend to be more prepared for disasters, and vice versa.

Based on these explanations, a study was conducted to investigate the correlation between resilience and preparedness among students at SMP Negeri 26 Jakarta who had experienced flooding. This location was chosen because it is situated in Kampung Melayu, a flood-prone area, allowing for an analysis of the relationship between resilience levels and preparedness among students affected by flooding.

## METHOD

### Research Location

This research was conducted at State Junior High School (SMP) 26 Jakarta, located in RW 05, Kampung Melayu

Subdistrict, Jatinegara District, East Jakarta Administrative City. The research was carried out over a period starting from December 2021 and concluded in June 2022. The specific location where the study took place is depicted in Figure 1. The selection of this site was

based on various considerations, including its representativeness of the urban education context in Jakarta and its accessibility for consistent data collection throughout the research timeline.

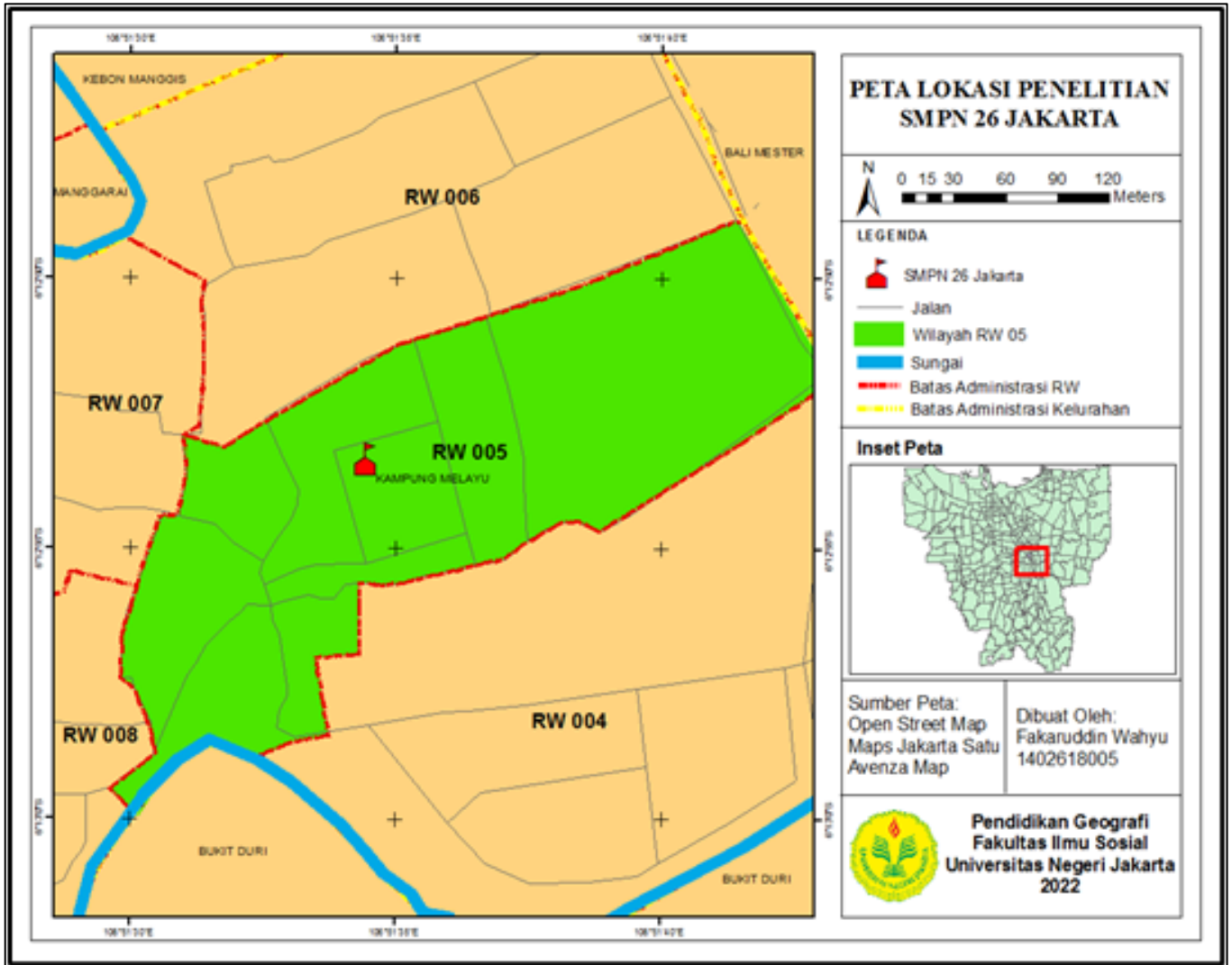


Figure 1. Research location Map

### Population and Sample

This study employs a descriptive quantitative research design with a correlational approach, aiming to examine the relationships between variables that are mathematical and measurable in nature (Creswell, 2014). The choice of this approach is grounded in its suitability for investigating the strength and direction of associations between quantifiable factors. In this research, the sample was determined using a simple random sampling technique drawn from a population of 250 students at State Junior High School (SMP) 26

Jakarta. The final sample size utilized in the study consisted of 83 students, ensuring a statistically representative subset of the population for reliable data analysis and interpretation. This sampling technique was selected to minimize bias and enhance the generalizability of the study's findings.

### Research Instrument

The research instrument employed in this study is a questionnaire comprising two variables, namely disaster preparedness and resilience, with a total of 44 questions.

The questionnaire is based on disaster preparedness indicators formulated by LIPI in collaboration with UNESCO/ISDR (2006) and the Adolescents' Resilience in Disaster Tool developed by Mohammadinia et al. (2019). This comprehensive tool was selected to ensure the measurement of both preparedness and resilience is grounded in established frameworks, thus enhancing the reliability and validity of the data collected. Each variable is measured using items specifically designed to capture key aspects relevant to disaster response and adolescent resilience.

**Data Collection and Data Analysis**

Data were collected through questionnaires distributed to the respondents. The measurement of research variables in the questionnaire utilized a Likert scale, which had previously undergone validity and reliability testing using SPSS software. The results indicated that the instrument was valid, with a significance value of 0.00, and reliable, with a Cronbach’s alpha value ( $\alpha$ ) greater than 0.60. These findings confirm the robustness of the instrument in accurately measuring the intended constructs, ensuring that the data obtained is both consistent and dependable for further analysis.

Subsequently, the research data were processed using descriptive correlational analysis techniques with SPSS software. The analysis was carried out in three stages: data presentation, prerequisite testing, and hypothesis testing. The level of resilience was determined using a scoring interpretation technique, based on the criteria established by Azwar (2012).

**Table 2.** Guidelines for Resilience Level Categorization

Category	Scoring Criteria
Very Low	$X < M - 1.5SD$ $X < 6.5$
Low	$M - 1.5SD < X < M - 0.5SD$ $7 < X < 10.5$
Moderate	$M - 0.5SD < X < M + 0.5SD$ $11 < X < 14.5$
High	$M + 0.5SD < X < M + 1.5SD$ $15 < X < 19.5$
Very High	$X > M + 1.5SD$ $X > 20$

Source: Modified from Azwar (2022)

Note:

X = student score

M = mean score

SD = standard deviation

This structured approach ensures that the data analysis is thorough and methodical, providing clear insights into the relationships between variables. Each stage of the analysis was designed to systematically evaluate the data, verify assumptions, and test the research hypotheses in a rigorous manner.

Meanwhile, the disaster preparedness level is assessed based on guidelines established by LIPI, by first determining each student's preparedness index score using the following formula:

$$\text{Index score} = \left( \frac{\text{total actual score}}{\text{maximum score}} \right) \times 100$$

Once each student's index score is calculated, it is then categorized according to the following guidelines:

**Table 3.** Guidelines for Categorizing Disaster Preparedness Levels

Index Score	Category
80-100	Very Prepared
65-79	Prepared
55-64	Nearly Prepared
40-54	Less Prepared
Below 40 (0-39)	Not Prepared

Source: LIPI-UNESCO/ISDR, 2006

The prerequisite testing consists of three assumptions: normality, homogeneity, and linearity. Hypothesis testing was performed through a two-tailed test using Pearson correlation analysis. This method ensures the rigorous evaluation of the relationship between disaster preparedness and resilience, providing statistically valid insights into the data.

## RESULTS AND DISCUSSION

### Resilience Level of Students

State Junior High School (SMP) 26 Jakarta is located on Jalan Kebon Pala I, RW 05, Kampung Melayu Subdistrict, Jatinegara District, East Jakarta Administrative City. The school is situated in a flood-prone area. The total student population at SMP 26 Jakarta is 620, comprising 290 male students and 330 female students. In addition, the school employs 39 educators and administrative staff, including 28 teachers and 11 administrative personnel.

Based on research conducted on a sample of 83 students, it was found that the resilience levels among students at SMP 26 Jakarta fall within the high to very high categories. This is illustrated in the following table, highlighting the distribution of resilience levels among the student body. The findings suggest that despite the challenging environmental conditions, students demonstrate significant adaptive capacities, underscoring the school's potential to foster resilience in disaster-prone contexts.

**Table 4.** Resilience Levels of Students at SMP 26 Jakarta

Category	Frequency	Percentage (%)
High	6	7
Very High	77	93
<b>Total</b>	<b>83</b>	<b>100</b>

Source: Research Findings, 2022

This table presents the distribution of resilience levels among students at SMP 26 Jakarta, revealing that the majority (93%) of students demonstrate a very high level of resilience, while 7% of students are categorized as having a high level of resilience. These results underscore the strong adaptive capacity of students in facing potential challenges, particularly in a flood-prone environment.

Therefore, it can be concluded that the students exhibit a strong resilience against flooding. Consequently, should a flood occur in the future, they possess the skills necessary to manage the situation and recover swiftly. This finding aligns with the definition of resilience, which refers to an individual's capacity to confront various stressors or events that impact their lives.

Similar results were found in several other studies, such as the research conducted by Erchanis (2019),

which indicated that the resilience levels of communities that have experienced disasters generally fall within the moderate to high categories. A high level of resilience signifies the presence of capacities, processes, or positive adaptation outcomes from the optimal interaction between individuals and their environment. Thus, even in challenging situations, individuals can maintain their endurance. The level of resilience is positively correlated with an individual's fortitude. Resilient individuals are able to embrace their uniqueness and feel comfortable with their circumstances.

### Preparedness Level of Students

The level of disaster preparedness among students at SMP 26 Jakarta, based on the measurement results, falls within the very prepared category, as illustrated in the following table. This indicates that the students are not only equipped with resilience but are also well-prepared for potential disaster situations, enhancing their overall capacity to respond effectively to emergencies.

**Table 5.**

Disaster Preparedness Levels of Students at SMP 26 Jakarta

Category	Frequency	Percentage (%)
Almost Ready	5	6
Ready	19	23
Very Ready	59	71
<b>Total</b>	<b>83</b>	<b>100</b>

Source: Research Findings, 2022

Table 5 provides an insightful analysis of the disaster preparedness levels among students at SMP Negeri 26 Jakarta, specifically in relation to their readiness for potential flood events. The data reveals that 6% of students fall into the "Almost Ready" category, indicating some level of awareness and basic preparedness, although they may still require additional training or resources. A larger portion, comprising 23%, is classified as "Ready," suggesting that these students possess a moderate understanding of disaster response measures and have taken steps to prepare for potential flooding. The most significant segment of the student population, at 71%, is categorized as "Very Ready," demonstrating a high level of preparedness and an understanding of the necessary actions to take in the event of a flood. This substantial percentage reflects effective educational initiatives and training programs that have likely enhanced



the students' knowledge and skills regarding disaster response. Overall, the data indicates that the majority of students are well-equipped to face potential flooding scenarios, underlining the importance of continuous education and practical experience in fostering a culture of preparedness within the school community.

This data indicates that the students can be regarded as adequately prepared to face potential flooding disasters that may occur in the future. The results are influenced by various contributing factors, one of which is experience.

In her research, Dhinawati (2018) asserts that disaster preparedness is affected by both internal and external factors, with one internal factor being the experience of encountering disasters. The greater the exposure to disasters, the higher the level of preparedness (Dhinawati, 2018).

This correlation can be further illustrated in Table 6, which demonstrates that a significant portion of the students have experienced flooding at least more than three times. Therefore, it can be assumed that the students possess considerable experience in dealing with flood disasters.

**Table 6.** Frequency of Students Affected

Frequency	Percentage (%)
1	7
2	15.1
3	11.6
4	12.8
5	16.3
>5	37.2
Total	100

Source: Research Findings, 2022

Table 6 presents a detailed overview of the frequency with which students at SMP Negeri 26 Jakarta have experienced flooding events. The data reveals that 7% of students have encountered flooding only once, while 15.1% have faced it twice, indicating a limited level of exposure for these individuals. Approximately 11.6% of students report experiencing flooding three times, and 12.8% have experienced it four times, suggesting a growing familiarity with flood-related challenges. Notably, 16.3% of students have faced flooding five times, reflecting moderate exposure that may influence their preparedness strategies. The most significant group, comprising 37.2% of students, has encountered flooding more than five times, highlighting a high level of

exposure to such events. This substantial experience is crucial as it likely contributes to the students' understanding of disaster preparedness and resilience, emphasizing the importance of incorporating real-world experiences into educational frameworks to enhance their coping abilities in the face of future flooding challenges.

The relationship between resilience levels and disaster preparedness was assessed using Pearson correlation testing, with results presented in the following table.

**Table 7.** Results of Correlation Testing

Variable	Correlation Coefficient	Significance Value
Resilience and Preparedness	0.454	0

Source: Research Findings, 2022

Based on **Table 7**, it can be concluded that there is a relationship between the two variables, although the strength of this relationship falls within the moderate category. This conclusion is supported by the significance value, where a value less than 0.05 indicates a relationship between the variables. The degree of strength is measured through a correlation coefficient of 0.454, which, according to Sugiono's (2007) criteria, is categorized as moderate.

These findings are consistent with the research conducted by Erchanis (2019), which also revealed a relationship between the two variables. In this study, the observed relationship was positive, indicating that as the resilience level of students increases, so does their preparedness for disasters. This positive correlation underscores the importance of fostering resilience among students to enhance their overall readiness for potential emergencies.

## CONCLUSION

Based on the findings of this study, several conclusions can be drawn regarding the relationship between resilience and disaster preparedness among students at SMP Negeri 26 Jakarta. Notably, there exists a positive correlation between the levels of resilience and preparedness, indicating that as students' resilience increases, so too does their level of preparedness for disaster situations. The strength of this relationship is categorized as moderate.

The resilience levels of the students fall within the high to very high category, suggesting that they possess a significant capacity to withstand challenges. Consequently, in the event of future flooding, these students are likely to be able to effectively manage the situation and return to their normal state.

In addition, the students' preparedness levels are categorized as ready to very ready, reflecting their overall readiness to confront potential flood disasters. This indicates that the students have adequately equipped themselves with the knowledge and skills necessary for disaster response, demonstrating a commendable level of awareness and readiness to handle such emergencies.

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**Conflict of interest:** The author has no competing interests to declare that are relevant to the content of this article.

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