

## Enhancing Flood Preparedness Attitudes Through Local Wisdom-Based Audiovisual Education: A Pre-Experimental Study in Pembantanan Village

Doni Wibowo<sup>1</sup>, Noormailida Astuti<sup>2</sup>, Syufian Noor<sup>3</sup>, Gustiana Ningsih<sup>4</sup>

<sup>1,2,3,4</sup>Departemen Keperawatan Gawat Darurat dan Bencana, Fakultas Kesehatan dan Teknologi Informasi, Universitas Cahaya Bangsa, Banjar, Indonesia.

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### ABSTRACT

The limited knowledge and risk perception of the Pembantanan Village community regarding floods contributes to their low preparedness, increasing vulnerability to flood impacts. Education through audio-visual media based on local wisdom is considered effective because it makes information easier to understand and accept. This study aimed to examine the effect of audio-visual media education based on local wisdom on improving flood disaster preparedness in Pembantanan Village. A pre-experimental one-group pre-test and post-test design was used with 42 respondents selected via purposive sampling. Data were analyzed using a paired sample t-test. The results showed a significant improvement in preparedness attitudes after the intervention ( $p = 0.000$ ,  $p < 0.05$ ). It can be concluded that audio-visual media education based on local wisdom effectively enhances flood disaster preparedness among the community of Pembantanan Village.

*Minimnya pengetahuan dan persepsi risiko masyarakat Desa Pembantanan terhadap bencana banjir menjadi faktor utama rendahnya sikap kesiapsiagaan dalam menghadapi bencana banjir. Sikap kesiapsiagaan yang rendah dapat menyebabkan masyarakat rentan terhadap dampak bahaya banjir. Edukasi menggunakan media audio visual berbasis kearifan lokal dinilai efektif karena informasi lebih mudah dipahami dan diterima. Penelitian ini bertujuan mengetahui pengaruh edukasi media audio visual berbasis kearifan lokal terhadap peningkatan sikap kesiapsiagaan bencana banjir pada masyarakat di Desa Pembantanan. Penelitian ini menggunakan desain pre-eksperiment one group pre-test and post-test dengan 42 responden yang dipilih secara purposive sampling. Analisis data dilakukan melalui uji paired sample t-test. Hasil penelitian menunjukkan adanya peningkatan sikap kesiapsiagaan setelah intervensi dengan nilai p value 0,000 ( $p < 0,05$ ). Sehingga dapat disimpulkan bahwa Edukasi menggunakan media audio visual berbasis kearifan lokal berpengaruh dalam meningkatkan sikap kesiapsiagaan bencana banjir pada masyarakat di Desa Pembantanan.*

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### Corresponding Author:

**Doni Wibowo**

Program Studi Keperawatan, Fakultas Kesehatan Dan Teknologi Informasi, Universitas Cahaya Bangsa  
Gedung Universitas Cahaya Bangsa, Jl. A. Yani No. KM. 17, Gambut, Kec. Gambut, Kabupaten Banjar, 70122,  
Kalimantan Selatan, Indonesia

Email: [ns.doniwibowo@gmail.com](mailto:ns.doniwibowo@gmail.com)

## Backgrounds

Indonesia is an archipelagic country geographically situated in the equatorial region and located at the convergence of three major tectonic plates. This geographical setting causes Indonesia to frequently experience various natural disasters, such as floods, earthquakes, tsunamis, volcanic eruptions, landslides, and other geological hazards (Vivita et al., 2023). Flooding is the most frequently occurring natural disaster in Indonesia; in fact, the country ranks third globally as the most vulnerable to floods due to its tropical climate, which brings considerably high rainfall throughout the year (Budhiana, 2024). Annual rainfall in Indonesia ranges from 2,000 to 3,000 mm, particularly during the wet season, constituting one of the primary factors causing floods (Nanda, 2024). Data from the National Disaster Management Agency (BNPB) records that from 2021 to 2023, floods

were the most dominant disaster with 2,136 incidents, resulting in 409 deaths and missing persons, affecting 4,386,758 individuals, displacing 419,162 people, and causing damage to 105,808 houses (BNPB, 2023).

South Kalimantan is one of the most flood-vulnerable regions, particularly Banjar Regency and Sungai Tabuk Subdistrict, which suffered severe impacts from extreme flooding in January 2021. Based on a case study at the Syamsudin Noor Meteorological Station in Banjarmasin, rainfall reached 524 mm over five days (January 12–17, 2021) with a monthly total of 928.7 mm (nearly three times the normal average of 394 mm). This remarkably high rainfall ultimately triggered floods that inundated almost the entire region of South Kalimantan (Arrashid et al., 2023). Throughout 2021, South Kalimantan recorded 24 flood events that caused significant impacts, namely 28 fatalities, 871 injuries, 648,134 affected individuals, and 177,795 displaced persons. Among these, Banjar Regency emerged as the most severely affected area, recording 11 fatalities, 871 injuries, 281,318 affected individuals, and 82,888 displaced persons (BPBD Banjar Regency, 2021). Although the government has implemented various mitigation efforts, such as land rehabilitation and infrastructure development, the effectiveness of disaster management heavily relies on the active participation and preparedness of the community (Selatan, 2022)

Preparedness is an anticipatory measure undertaken to prepare for disasters, enabling individuals to act swiftly, accurately, and effectively. The high number of casualties and extensive losses caused by floods indicate a lack of preparedness and anticipation among the public, particularly those residing in flood-prone areas (Suryati et al., 2023). Despite comprehensive mitigation steps taken by the government, the 2021 flood cases in South Kalimantan Province highlighted persistent vulnerabilities to flood impacts, especially in Sungai Tabuk Subdistrict. As one of the five flood-prone subdistricts in Banjar Regency, Sungai Tabuk ranked first based on the number of flood-affected villages in 2021, with 13 affected villages, including Pembantanan Village, which experienced significant impacts ( Bappeda Litbang Banjar Regency, 2021, as cited in Rusmaniah et.al, 2025) .

Based on preliminary studies, the community in Pembantanan Village possesses local wisdom in dealing with floods; however, their low risk perception leads them to consider flooding as a "normal occurrence" that does not require special preparation. This results in a low level of community preparedness attitudes in facing flood disasters. Consequently, the evacuation process is often conducted abruptly and in haste, with some families only evacuating when the flood has already reached a severe level. This condition reflects poor preparedness attitudes, particularly in confronting emergency situations that demand a rapid and coordinated response. Therefore, there is an urgent need for tangible efforts in the form of effective education tailored to the socio-cultural context of the local community, making it more easily accepted and understood. This study utilizes Callista Roy's Adaptation Model (1999) as a theoretical framework, wherein preparedness attitudes are viewed as an individual's adaptive response. In the context of Pembantanan Village, low risk perception and minimal information are identified as contextual stimuli that perpetuate maladaptive behaviors. To trigger the necessary change, an educational intervention was designed as a specific and effective focal stimulus. This stimulus aims to activate the cognator subsystem, a coping mechanism encompassing perception, learning, and judgment, thereby gradually encouraging the community to transition from maladaptive attitudes to proactive and well-planned adaptive attitudes in facing flood disasters.

This research offers a novel approach focusing on local wisdom-based audiovisual media education. This differs from previous studies that utilized general educational media, such as the research by Riu (2024) and Narayana et al., (2022), which demonstrated the effectiveness of audiovisual education in improving knowledge and preparedness attitudes toward disasters. The present study integrates audiovisual media with the Banjarese language, the local dialect of the community. The utilization of the Banjarese language in the educational media serves as a crucial novelty, which is expected to enhance the relevance of the message and facilitate easier information assimilation by the community. Through this approach, it is anticipated to overcome the low risk perception and cultivate better preparedness attitudes. Based on these issues, this study aims to determine the effect of local wisdom-based audiovisual media education on flood disaster preparedness attitudes among the community in Pembantanan Village. It is expected that the findings of this research will serve as a foundation for regional governments and relevant stakeholders to formulate more effective disaster mitigation strategies

that do not solely rely on technical approaches but also utilize and integrate the living local wisdom within the community.

## **Research Methods**

### **Research Design**

This study employed a quantitative approach utilizing a pre-experimental design, specifically a one-group pretest-posttest design, which involved only one intervention group without a control group. This design aimed to measure changes in respondents' preparedness in Pembantanan Village before and after the intervention, which was conducted entirely on August 16, 2025. To mitigate the limitations of this design, which is highly susceptible to external factors, the researchers ensured through a screening process that the respondents had not previously received any flood disaster preparedness education. The research procedure included a pretest (30 minutes, including confirmation of questionnaire information), followed by an audiovisual intervention using the Banjarese language (30 minutes, including a question-and-answer session), and concluded with a posttest (30 minutes, including a discussion to confirm the ease of understanding the material). All stages were conducted within a single day due to time constraints and field conditions. This brief implementation period potentially induces a short-term memory effect; therefore, the results more accurately represent immediate attitudinal changes following the intervention rather than stable, long-term modifications.

### **Population and Sample**

The population in this study comprised the community of Pembantanan Village. The research sample was selected using a purposive sampling technique, yielding a total of 42 respondents chosen based on predetermined inclusion criteria. These criteria included individuals residing in Pembantanan Village, willing to participate as respondents, aged over 17 years old, and having prior experience with floods.

### **Intervention**

The intervention in this study was conducted by providing education on pre-flood preparedness using local wisdom-based audiovisual media. The educational video utilized incorporated elements of the local wisdom of the Pembantanan Village community, such as the use of the Banjarese language as the medium of instruction. It also featured local community practices, such as the use of *apar-apar* (wooden racks) to elevate household goods to a higher place before floodwaters enter. The educational video, with a duration of 8 minutes and 15 seconds, was compiled and developed by the researchers and involved the local community to ensure that it aligned with the local culture, thereby making it easily comprehensible for the residents. The intervention was delivered in a group setting, where all respondents were gathered in one location to watch the video collectively. Following the video screening, the researchers facilitated a question-and-answer session to clarify the material content and ensure the respondents' understanding of flood disaster preparedness efforts.

### **Instruments**

The instrument used in this study was a questionnaire comprising attitudinal statements regarding flood disaster preparedness. This questionnaire was adopted from Hildayanto's (2020) research, utilizing preparedness parameters based on the 2006 LIPI-UNESCO/ISDR study. It consisted of 14 statement items measured on a 5-point Likert scale: strongly agree (1), agree (2), somewhat disagree (3), disagree (4), and strongly disagree (5). This instrument had undergone validity testing using the Pearson Product-Moment correlation and was declared valid. It also passed reliability testing, yielding a Cronbach's Alpha coefficient of 0.938, concluding that the questionnaire was highly reliable and feasible for use in the study. In addition to the questionnaire, this study utilized educational media in the form of a video as the intervention tool. The video was developed by adapting

to the local culture and language, alongside involving the participation of the local community, ensuring that the delivered material was easily understood and highly relevant to their daily life context.

### **Data Analysis**

The data obtained from the questionnaires were analyzed using descriptive statistics to illustrate respondent characteristics and the distribution of the main variables. Prior to hypothesis testing, a normality test was conducted to ascertain the data distribution. For normally distributed data, the differences between the pretest and posttest results were analyzed using a paired sample t-test. The significance level was set at  $\alpha = 0.05$ , with a criterion of  $p < 0.05$  indicating a statistically significant difference following the implementation of the intervention.

### **Research Ethics**

This study obtained ethical clearance from the Research Ethics Committee of STIKES Intan Martapura under protocol number 065/KE/YBIP-SI/VII/2025. All study participants were provided with informed consent forms prior to their participation in the research. The informed consent detailed the study's objectives, the procedures to be conducted, potential risks and benefits, as well as their right to withdraw from the study at any time without facing any consequences.

### **Results**

#### **Demographic Characteristics of Respondents**

The study included a total of 42 respondents from Pembantanan Village. The demographic characteristics, encompassing age, gender, and highest level of education, are detailed in Table 1. The majority of the participants were female (59.5%) and belonged to the early elderly age group of 46–55 years (45.2%). Regarding educational background, a significant proportion of the respondents possessed an elementary school education (42.9%).

**Table 1**

*Demographic Characteristics of Respondents (N = 42)*

Characteristic	Frequency (n)	Percentage (%)
Age		
17–25 years	1	2.4
26–35 years	6	14.3
36–45 years	14	33.3
46–55 years	19	45.2
> 55 years	2	4.8
Gender		
Male	17	40.5
Female	25	59.5
Highest Education Level		
No formal education	4	9.5
Elementary school	18	42.9
Junior high school	4	9.5
Senior high school	14	33.3
Diploma/Bachelor's degree	2	4.8

### Distribution of Preparedness Attitudes

Table 2 illustrates the distribution of respondents' flood preparedness attitudes before and after the educational intervention. Prior to the intervention, the majority of respondents (76.2%) demonstrated a fair level of preparedness, with none categorized as having a poor attitude. Following the provision of local wisdom-based audiovisual education, preparedness attitudes improved substantially, with 90.5% of respondents shifting into the good preparedness category.

**Table 2**

*Distribution of Preparedness Attitudes Before and After the Educational Intervention (n=42)*

Preparedness Attitude	Pretest n	Pretest %	Posttest n	Posttest %
Good	10	23.8	38	90.5
Fair	32	76.2	4	9.5
Poor	0	0.0	0	0.0

### Effect of Local Wisdom-Based Audiovisual Education

Prior to conducting the hypothesis test, a Shapiro-Wilk test was performed to assess the normality of the data distribution for preparedness attitudes. The results indicated that the data were normally distributed for both the pretest ( $p = .514$ ) and the posttest ( $p = .193$ ). Consequently, a paired-samples  $t$ -test was utilized to evaluate the mean differences.

A paired-samples  $t$ -test was conducted to determine the effect of the local wisdom-based audiovisual educational intervention on the community's flood preparedness attitudes. As presented in Table 3, the results revealed a statistically significant increase in preparedness scores from the pretest ( $M = 48.69, SD = 5.43$ ) to the posttest ( $M = 60.17, SD = 4.97$ ),  $t(41) = -20.76, p < .001$ . These findings conclude that the local wisdom-based audiovisual education had a significant and positive effect on enhancing flood disaster preparedness attitudes among the community in Pembantanan Village.

**Table 3**

*Paired-Samples t-Test Results for Flood Preparedness Attitudes*

Variable	M	SD	SE	t	df	p
<b>Preparedness Attitude (Posttest – Pretest)</b>	-11.48	3.58	0.55	-20.76	41	< .001

*Note.* M = Mean; SD = Standard Deviation; SE = Standard Error Mean.

## Discussion

The flood preparedness attitudes of the Pembantanan Village community prior to the educational intervention were sub-optimal. Out of the 42 respondents, the majority, comprising 32 respondents (76.2%), fell into the fair category, while 10 respondents (23.8%) were in the good category. These findings align with a study by Susilawati (2025), which demonstrated that the majority of respondents were in the fair category (44 respondents, or 44%), followed by the good category (34 respondents, or 34%), and the poor category (22 respondents, or 22%). These results indicate that although the community possesses basic awareness, their attitudes reflect that they are not yet fully prepared to face disasters.

One of the most evident indications of this sub-optimality is the tendency to adopt a passive attitude, as reflected by the low score on the statement, "I prefer to stay at home when a disaster occurs." This statement only obtained a score of 100 (48%) out of a maximum score of 210 (100%), reflecting a lack of awareness regarding the importance of early evacuation or active self-rescue measures. This finding is consistent with (Maharani et al., (2025), whose study revealed that the lowest indicator was found in the statement concerning staying at home during a disaster. Remaining passive during a disaster serves as an indicator of the respondents' unreadiness to confront flood hazards. The low score on this indicator is one of the primary reasons why the majority of respondents were categorized merely as fair.

Nevertheless, there are existing indicators of positive attitudes within the community. One of the statements with the highest score was "saving important documents in a high place," which obtained a score of 176 (84%) out of the maximum 210 (100%). This demonstrates that the community is accustomed to taking basic preventive measures to protect their belongings. The high percentage of respondents falling into the fair to good categories suggests a foundational level of preparedness. This can be attributed to several factors, one of which is the predominance of the productive age group among the respondents' characteristics. Based on the data, 45% of the respondents were in the 46–55 age range. Age plays a crucial role in preparedness because, as individuals grow older, they tend to acquire deeper knowledge and experience in dealing with disasters (Monalia & Noorratri, 2024).

However, experience alone does not guarantee adequate preparedness. Research by Ashari and Nurhafifa, (2023) demonstrated that although the community of Beka Village had repeatedly experienced floods, they still did not exhibit optimal preparedness because they lacked systematic procedures. Another factor influencing this preparedness attitude is the low level of education. The data indicate that the majority of respondents have a low educational background (no formal education, elementary school, and junior high school). This condition aligns with a study by Efendi et al., (2022), which found that the preparedness of pregnant women and families in the Selat Community Health Center area was in the fair category (37.5%), with the majority having only an elementary or junior high school education. This is further corroborated by Nurhidayati and Ratnawati (2018), who highlighted that a low level of education limits exposure to the information and knowledge necessary to form preparedness attitudes. Therefore, the sub-optimal preparedness attitudes of the Pembantanan Village community are influenced by limited knowledge and low educational levels, causing the community to lean towards passivity rather than taking swift and precise actions during flood disasters.

Following the provision of local wisdom-based audiovisual education, there was a significant improvement in the preparedness attitudes of the Pembantanan Village community. Based on the obtained data, the majority of respondents showed an improvement, shifting to the good category (38 respondents, or 90.5%), while 4 respondents (9.5%) remained in the fair category. This signifies that the provided education was capable of enhancing the community's preparedness attitudes. This outcome is consistent with Giena et al. (2022), who also reported a significant improvement in respondents' preparedness attitudes after the implementation of audiovisual media; out of 77 respondents, the majority reached the good category (64 respondents, or 83.1%), and 13 respondents (16.9%) maintained the same level of preparedness post-intervention, which was in the fair category.

The enhancement in preparedness attitudes was observable across several parameters, particularly in knowledge and attitude. During the pretest, the statement "I prefer to stay at home when a flood occurs" received a low score; however, post-intervention, the score increased to 156 (74%) out of the maximum 210 (100%). This increment indicates a decline in agreement with passive attitudes and the emergence of awareness regarding the importance of early evacuation and active measures. Furthermore, this education successfully reinforced existing positive attitudes. The statement "saving important documents in a high place," which already had a high pretest score, experienced a further increase to 192 (91%). This implies that the education not only transformed negative attitudes into positive ones but also strengthened the pre-existing positive habits within the community.

This is supported by Sari et al. (2020), who stated that local wisdom-based disaster education is capable of increasing understanding and driving changes in community attitudes and behaviors. Audiovisual media also play a vital role as educational tools that deliver information multisensorially by combining sound, images, and local narration, which reinforces comprehension and shapes preparedness attitudes (Taufik, 2024). This is also in line with Husniawati and Herawati (2023), who emphasized that profound knowledge plays a critical role in fostering positive attitudinal changes.

The effect of local wisdom-based audiovisual media education on flood disaster preparedness attitudes among the community in Pembantanan Village was assessed through pretest and posttest measurements. The analysis of the preparedness attitude variable yielded a  $p$ -value of  $< .001$ . These statistical test results indicate a significant value for both variables; thus, the null hypothesis ( $H_0$ ) in this study is rejected, and the alternative hypothesis ( $H_a$ ) is accepted. This proves that there is a significant effect of local wisdom-based audiovisual media education on the enhancement of flood disaster preparedness attitudes among the community in Pembantanan Village.

The results of this study align with the findings of Giena et al. (2022) which demonstrated a significant difference before and after the provision of audiovisual education regarding flood preparedness. Their results showed an increase in preparedness attitudes following the educational intervention. This enhancement was also corroborated by their Wilcoxon test results, which yielded a  $p$ -value of  $< .001$  at a significance level of  $\alpha = 0.05$ ; thus, it was concluded that providing flood disaster preparedness education through audiovisual media significantly affects the level of preparedness attitudes in facing floods.

According to Hamba et al. (2024), utilizing educational videos within a local context offers distinct advantages, as the community tends to more readily accept messages delivered through media that are familiar to their daily lives. This is reinforced by a study by Apriyanto (2023), which examined the effectiveness of counseling using local language media on adolescents' knowledge of premarital sex in Bhuana Giri Village, Karangasem. Their Mann-Whitney test results showed a significant difference between the groups receiving counseling in Indonesian and the local language ( $p = .025$ ), where the average post-counseling score was higher in the local language group ( $M = 30.06$ ) compared to the Indonesian language group ( $M = 20.94$ ).

Another study by Firmansyah et al. (2019) also supports the effectiveness of using local languages in health education. Their findings revealed that video media in the local language was more effective in increasing adolescent knowledge about the dangers of smoking compared to local language leaflets. The average knowledge improvement score for the video media reached 2.32, whereas the leaflet only achieved 1.98. This demonstrates that education utilizing local language videos provides a more substantial impact on enhancing adolescents'

understanding. Although both interventions exerted a significant effect ( $p < .001$ ), the local language video media was deemed superior in terms of effectiveness.

Although the research results indicate a significant improvement in community preparedness attitudes following the education, it must be noted that this study utilized a pretest-posttest design conducted within a single day. This implies that attitude measurements were only taken over a short timeframe, making it impossible to ascertain whether these attitudinal changes will be sustained in the long term. In other words, these results reflect the short-term effects of the intervention. Therefore, the interpretation of these findings must be approached with caution, as long-term retention of this attitudinal shift remains unverified.

Theoretically, this effect can be elucidated through Callista Roy's Adaptation Model (1999). In this context, the audiovisual media acts as a focal stimulus that triggers the adaptation process within the community. The delivered information is processed through cognitive mechanisms (cognator), which ultimately produces an adaptive response in the form of enhanced preparedness attitudes. Education using local wisdom-based audiovisual media positively influences preparedness attitudes because employing engaging media that incorporate local language and culture is a highly appropriate strategy to boost community interest, understanding, and engagement. This approach encourages the target group to listen more enthusiastically and implement the conveyed messages. Thus, this educational approach is not only culturally relevant but also proves that proper communication strategies can positively impact changes in community preparedness attitudes toward flood disasters.

### **Research Limitations**

This study possesses several limitations. First, the most significant limitation is the use of a pre-experimental one-group pretest-posttest design without a control group. The absence of a control or comparison group limits the internal validity of the study, as it is difficult to guarantee that the improvement in preparedness attitudes was solely caused by the administered intervention; other factors, such as information exposure from mass media, personal experiences, and interpersonal discussions among residents, could also influence the outcomes. Second, respondent participation was somewhat limited due to many community members being unwilling to participate owing to busy schedules, sudden activities, and a lack of interest in the research. Nevertheless, the study was successfully executed with 42 respondents who met the inclusion criteria, and this number still fulfills the minimum requirement for experimental research. Third, the educational media utilized did not undergo preliminary pilot testing prior to being administered to the respondents due to time constraints; consequently, the media was used directly during the intervention. Fourth, the employed educational media cannot be generalized to outside communities with differing local wisdom, considering that the language and materials were specifically tailored to the culture and local wisdom of the Pembantanan community in confronting flood disasters.

### **Conclusion**

This study demonstrates that education utilizing local wisdom-based audiovisual media is effective in enhancing flood disaster preparedness attitudes among the community in Pembantanan Village. This is evidenced by the research findings on 42 respondents, where the "good" attitude category surged from 23.8% (pretest) to 90.5% (posttest) following the education. Statistical testing yielded a  $p$ -value of  $< .001$ , indicating a highly significant difference in flood disaster preparedness attitude scores before and after the provision of the local wisdom-based audiovisual media education. These results affirm that local wisdom-based audiovisual media can serve as an effective and relevant educational strategy in flood disaster mitigation efforts. Practically, these findings can serve as a reference for local health authorities and disaster management agencies to consider developing and implementing similar educational programs tailored to the cultural context and local wisdom in other disaster-prone regions. However, because all research stages were conducted within a single day, the observed changes likely reflect short-term improvements in understanding and attitudes. Therefore, future research employing a

quasi-experimental design with a control group and a longitudinal follow-up (3–6 months) is highly recommended to assess the long-term sustainability of the changes in the community's preparedness attitudes.

### CreDiT Author Statement

**Doni Wibowo:** Conceptualization, Methodology, Formal analysis, Validation, Project administration, Writing-original draft. **Noormailida Astuti:** Conceptualization, Writing – review & editing, Software, Data curation, Supervision, Validation. **Syufian Noor:** Validation, Software, Data curation.. **Gustiana Ningsih:** Validation, Data curation.

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