International Journal of Health, Economics, and Social Sciences (IJHESS)
Vol. 8, No. 3, 2026, pp. 1835~1841
DOI: 10.56338/ijhess.v8i3.11154
Website: https://jurnal.unismuhpalu.ac.id/index.php/IJHESS

The Effect of Health Education Through Interactive Educational Videos on Public Knowledge About Handling Post-Flood Diarrhea in the Tilango Health Center Working Area

Fatmawati Nggai[1], Ita Sulistiani Basir[2], Ibrahim Suleman[3]
[1]Mahasiswa Program Studi Ilmu Keperawatan UNG
[2]Dosen Program Studi Ilmu Keperawatan UNG
[3]Dosen Program Studi Ilmu Keperawatan UNG

Email Correspondence fatmawatynggai@gmail.com

Article Info

Article history:
Received 11 Mar, 2026
Revised 14 May, 2026
Accepted 25 May, 2026

Keywords:
health education, floods, post-flood diarrhea, knowledge, interactive educational videos

ABSTRACT

Floods are one of the disasters that often occur and have an impact on increasing health problems, one of which is diarrhea. Post-flood diarrhea is generally caused by poor sanitation and limited access to clean water. In Indonesia, floods are the most common disasters with 1,166 incidents in 2023 that have an impact on 4.2 million people. In Gorontalo Province, floods occur almost every year which impact tens of thousands of people. Post-flood conditions increase the risk of environment-based diseases, especially diarrhea. This study aims to determine the influence of health education through interactive educational videos on public knowledge about handling diarrhea after flooding in the working area of the Tilango Health Center.

The research uses a quantitative method with a pre-experimental design of the one-group pretest-posttest type. The population of 163 people with a sample of 62 respondents used the purposive sampling technique. The research instruments are in the form of knowledge questionnaires and educational video media. Data analysis used the Wilcoxon test.

The results of the study showed that there was a significant influence of health education through interactive educational videos on increasing public knowledge with a p-value = 0.000 ($\alpha < 0.05$). The conclusion of this study is that interactive educational videos are effective in increasing public knowledge about handling diarrhea after floods and can be a sustainable digital media-based health promotion strategy.

INTRODUCTION

Natural disasters are events that cannot be controlled and have the potential to cause great damage to the environment, property, and human life. One of the most frequent disasters is flooding, which is caused by various factors such as high rainfall, overflowing rivers, and poor drainage systems. Floods not only cause material losses and casualties, but also have an impact on increasing public health problems.

Globally, floods are the most frequent hydrometeorological disasters. Data shows that from 1990 to 2022 there have been 4,713 flood events in 168 countries that affected more than 3.2 billion people and caused around 218,353 deaths, with economic losses reaching more than US$1.3 trillion. In 2022, of the 321 major disasters that occurred, 163 incidents were floods with more than 8,000 fatalities. This shows that flooding is still a serious threat to human health and safety around the world.

In Indonesia, floods are also the most dominant disaster. Based on data from the National Disaster Management Agency, in 2023 there were 1,166 flood incidents affecting around 4.2 million people, while in 2022 it reached 5.7 million people affected. In the period 2014-2023, there were 8,333 flood incidents recorded in Indonesia, with the peak occurring in 2020 and 2021. By mid-2025, the number of flood incidents has reached more than 1,048 incidents. The high number shows that flooding is still a major problem that has a wide impact on people's lives.

One of the most common health impacts after floods is diarrhea. The World Health Organization states that water-based diseases such as diarrhea are the greatest health risk after floods. A global meta-analysis study showed that the risk of diarrheal occurrence increased by 40% after flooding (RR = 1.40; 95% CI: 1.29–1.52). In addition, studies on more than 600,000 children in developing countries showed that the incidence of diarrhea increased significantly in the second to fourth weeks after the flood. This shows that post-flood conditions are very vulnerable to the spread of environment-based diseases.

In Indonesia, cases of diarrhea after the flood are also still relatively high. In Balusase Village, Sigi Regency, there were 105 cases of diarrhea after the flood, while in North Aceh there were 1,949 cases in toddlers and 3,653 cases in children over five years old. Meanwhile, in Gorontalo Province, it is often hit by floods every year, including the work area of the Tilango Health Center. Throughout 2025, several major flood events will cause thousands of houses to be submerged and tens of thousands of people affected, including vulnerable groups such as toddlers, the elderly, and pregnant women.

In Gorontalo Regency, the highest incidence of diarrhea after flooding in Gorontalo Regency in the January-August 2025 period was found at the Limboto Health Center with 175 cases, followed by the Tilango Health Center with 163 cases (Gorontalo Regency Health Office, 2025). This data is strengthened by the internal report of the Tilango Health Center which also recorded 163 cases of diarrhea after the flood in the same period (Tilango Health Center, 2025). Although the number of cases in Limboto is higher, Tilango District is the area most often affected by floods compared to other sub-districts, so it has a greater risk of diarrhea after flooding. Therefore, the work area of the Tilango Health Center was chosen as the most relevant research location to examine the relationship between flooding and diarrhea incidence.

The low level of public knowledge and the high incidence of diarrhea indicate the need for effective health education interventions. One method that can be used is interactive educational videos, which are able to improve understanding through a combination of visual, audio, and active participant engagement. This media is considered more effective than conventional methods because it can increase attention, understanding, and information retention.

The results of the initial observation carried out on September 12, 2025 on 10 people in the Tilango Health Center work area show that the level of community knowledge is still low. A total of 7 respondents (70%) did not know the causes and methods of preventing diarrhea after the flood, and 6 respondents (60%) did not know the initial treatment steps when experiencing diarrhea. In addition, only 3 respondents (30%) had ever received health education from health center officers. These findings show that there is a significant knowledge gap in society.

Based on the description above, the researcher is interested in further researching "the effect of health education through interactive educational videos on increasing public knowledge about handling diarrhea after flooding in the working area of the Tilango Health Center.".

RESEARCH METHODS

This study is a quantitative research with a pre-experimental design of the one-group pretest-posttest type, where measurements are carried out before (pretest) and after (posttest) intervention in the form of interactive educational videos.. The study population of people diagnosed with post-flood diarrhea amounted to 163 people. The sample totaled 62 respondents. The sampling technique uses purposive sampling. The research instrument uses knowledge instruments. Data analysis was carried out univariate and bivariate using the Wilcoxon test.

RESEARCH RESULTS

Respondent Characteristics

Table 1 Characteristics of Respondents by Gender

Gender	N	%
Male	33	47,8
Women	36	52,2
Total	**69**	**100**

Source: Primary Data, 2026

Based on table 1, it can be seen that the majority are female, namely 36 respondents (52.2%).

Table 2 Characteristics of Respondents by Age

Age	N	%
Late Teens (17-25 Years)	11	15,9
Early Adult (26-35 years)	19	27,5
Late Adult (36-45 years)	15	21,7
Early Elderly (46-55 Years)	21	30,4

Late Elderly (56-65 Years)	3	4,3
Total	**69**	**100**

Source: Primary Data, 2026

Based on Table 2, most of them are in the Early Elderly age group (46-55 years), which is 21 people (30.4%) and a small part is in the Late Elderly group (56-65 years) as many as 3 people (4.3%).

Table 3 Characteristics of Respondents by Education

Education	N	%
SD	28	39,1
Junior High School	18	26,1
High School	23	33,3
S1	1	1,4
Total	**69**	**100**

Source: Primary Data, 2026

Based on table 3, it can be seen that the level of education is dominated by elementary school graduates, which is 28 people (39.1%) and a small number of S1 education, which amounts to 1 person (1.4%).

Table 4. Characteristics of Respondents by Occupation

Jobs	N	%
IRT	24	34,8
Labor	18	26,1
Merchant	9	13
Fisherman	4	5,8
Self-employed	3	4,3
Private	5	7,2
ASN	1	1,4
Students	2	2,9
Not Working	3	4,3
Total	**69**	**100**

Source: Primary Data, 2026

Based on table 4, it can be seen that most of the respondents work as IRTs, namely 24 people (34.8%) and as small as working as ASN, which is as many as 1 person (1.4%).

Table 5 Characteristics of Respondents Based on Education on Post-Flood Diarrhea Handling

Education	N	%
Yes	24	34,8
No	45	65.2
Total	**69**	**100**

Source: Primary Data, 2026

Based on table 5, it can be seen that most of the respondents have 1 child, which is 30 people (31.9%) and a small number of respondents have 6 children, which is 1 person (1.1%).

Research Variables

Table 6 Knowledge of Respondents Pre-Given Interactive Video Education

Knowledge	N	%
Good	28	40,2
Enough	41	59,8
Total	**69**	**100**

Source: Primary Data, 2026

Based on table 6, it can be seen that the majority of respondents have sufficient knowledge to be given pre-education, namely 41 people (59.8%).

Table 7 Knowledge of Post Respondents Given Interactive Video Education

Knowledge	N	%
Good	68	98,6
Enough	1	1,4
Total	**69**	**100**

Source: Primary Data, 2026

Based on table 7, it can be seen that the majority of respondents have good knowledge given post education, namely 68 people (98.6%).

Bivariate Analysis

Table 8 The Effect of Interactive Educational Videos on Knowledge of Post-Flood Diarrhea Handling in the Tilango Health Center Area

Variable	N	Red	Median	Std. Dev	Min	Max	Z	P-Value
Pre-Education	69	14,98	15	1,29	12	18	-6,172	0,000
Post Education	69	19,12	19	1,28	15	21		

Source: Primary Data, 2026

The statistical test used in this study is the Wilcoxon Signed Rank Test, because the data analyzed is ordinal scale and comes from paired measurements (pretest and posttest on the same respondent). In this study, no normality test was carried out, because the normality test is only needed on numerical scale data that will be analyzed using parametric tests. Meanwhile, the knowledge level data in this study is categorized as good, sufficient, and poor, so it is included in the ordinal scale.

Based on the results of the analysis using the Wilcoxon Signed Rank Test, the number of respondents (N) was 69 people. The Z value (standardized test statistic) is -6.172 with an Asymptotic Significance (2-tailed) value of 0.000. Because the p-value is $0.000 \leq 0.05$, it can be concluded that there is an influence of health education through interactive educational videos on public knowledge about the handling of diarrhea after flooding.

DISCUSSION

The level of public knowledge about the management of post-flood diarrhea before being given interactive educational video interventions

Based on the results of the study, of the 69 respondents, most of them had a level of knowledge in the sufficient category, namely 41 respondents (59.8%) before being given interactive educational video interventions. This shows that the majority of people have a basic understanding of the handling of post-flood diarrhea, but have not fully understood more specific aspects, such as danger signs, complications, and proper handling.

The analysis of question items showed that the most errors were found in the indicators of diarrhea impact and complications, especially in item number 9, as well as indicators of diarrhea handling in several items (numbers 12, 13, 14, 16, and 18). These findings indicate that respondents have not optimally understood the risk of complications such as severe dehydration and electrolyte impairment. According to the World Health Organization (2024), deaths from diarrhea are generally caused by unrecognized dehydration and are not treated quickly.

The dominance of the knowledge category can be explained through the Health Belief Model (HBM) theory, which states that health understanding and behavior are influenced by an individual's perception of the vulnerability and severity of the disease. Respondents may already have a basic understanding of diarrhea, but do not have a strong perception of the risk of complications, so they are not encouraged to understand health information more deeply.

The results of this study are in line with the research of Meutia et al. (2024) which shows that before being given health promotion, most respondents had a sufficient level of knowledge, which is around 60–67%. This shows that without structured educational interventions, people tend to only have basic knowledge that is not optimal.

In addition, the level of knowledge of the respondents was also influenced by educational factors and previous exposure to information. The majority of respondents in the category have a sufficient level of basic education (elementary and some junior high schools) and have never received education related to handling diarrhea after the flood. According to Notoatmodjo's theory, the level of education plays an important role in an individual's ability to understand health information, where the higher the education, the better the ability to receive and process information.

On the other hand, there were 28 respondents (40.2%) who had a level of knowledge in the good category before the intervention. Respondents in this category are generally able to correctly answer questions related to the definition, causes, danger signs, and early treatment of diarrhea such as the administration of fluids and oralit. This shows that some respondents have a fairly good understanding, although overall it is still dominated by the sufficient category.

In the perspective of the Theory of Planned Behavior, a good level of knowledge can be influenced by attitudes, subjective norms, and previous experiences. Respondents who had experience caring for family members with diarrhea or had received health education tended to have a better understanding. This is also supported by research by Valentine et al. (2025) which shows that there is variation in the level of knowledge before the intervention, which is influenced by individual characteristics such as age and experience.

Age characteristics also play a role in the level of knowledge, where respondents with good categories are dominated by mature adult age groups (46–55 years). At this stage, individuals generally have a broader life experience as well as greater responsibility for family health, making it easier to understand health information. In addition, respondents who had received previous education showed a better level of knowledge than those who had never been exposed to information.

The level of public knowledge about the management of diarrhea after being given an interactive educational video intervention

Based on the results of the study, the majority of respondents experienced an increase in the level of knowledge after being educated through interactive educational videos. Of the 69 respondents, 68 people (98.6%) were in the category of good knowledge. These results show that almost all respondents experienced an increase in understanding after being given health education interventions.

The increase in knowledge is not only seen from the total score, but also from an even understanding of all indicators, including the concept of flooding, the definition and symptoms of diarrhea, causes and transmission, impacts and complications, handling, and prevention of diarrhea. This shows that interactive educational video media is able to improve comprehensively, not only on certain aspects, but as a whole.

In addition, after the video screening, a question and answer session was held as a form of interactivity to strengthen respondents' understanding. Most of the questions asked by respondents were related to the treatment of diarrhea, such as the right time to go to the health facility, early action during diarrhea, and the importance of giving oralite instead of regular water. This shows that before the intervention, respondents still had limited understanding of the handling aspect, so the interactive session played an important role in clarifying the information that had been conveyed.

According to Notoatmodjo's theory, knowledge is obtained through the process of sense, especially through sight and hearing. Therefore, the use of media that combines visual and audio elements, such as interactive educational videos, can increase information capture and retention. This is in line with research by Mawan et al. (2022) which states that health education can increase public knowledge and awareness in the management of diarrheal diseases.

However, there was still 1 respondent (1.4%) who was in the category of sufficient knowledge after the intervention. This shows that the increase in knowledge does not occur equally in all individuals. These respondents are known to have a basic level of education and belong to the early elderly age group, which can affect the ability to receive and process health information.

Theoretically, changes in health knowledge and behavior are a gradual process. Individuals can experience stages ranging from lack of awareness to the formation of persistent health behaviors. Not all individuals can reach this stage in the same time, as they are influenced by factors such as education, age, and previous experience. This is in line with the research of Oviana et al. (2025) which shows that although health education is effective in increasing knowledge, not all respondents achieve the optimal level of knowledge.

Thus, it can be concluded that health education through interactive educational videos is effective in increasing the level of public knowledge about handling diarrhea after flooding.

The Effect of Interactive Educational Videos on Knowledge of Handling Post-Flood Diarrhea in the Tilango Health Center Area

The results of statistical analysis using the Wilcoxon Signed Rank Test showed a p-value of 0.000 ($p < 0.05$), which means that there was a significant difference between the level of knowledge of respondents before (pre-test) and after (post-test) education was provided through interactive educational videos. Thus, H_0 is rejected and H_1 is accepted, so it can be concluded that interactive educational video media is effective in increasing public knowledge.

Descriptively, the average knowledge score of the respondents increased from 14.98 before the intervention to 19.12 after the intervention. There was an increase of 4.14 points or around 27.64%. When compared to the maximum score of the instrument (21 points), knowledge achievement increased from 71.33% to 91.05%, or an increase of 19.72%. In addition, the minimum value also increased from 12 to 15, which indicates that the increase did not only occur in some respondents, but almost evenly in the entire sample. These findings reinforce

that education through interactive videos has a significant impact on the improvement of respondents' knowledge.

Theoretically, the effectiveness of interactive educational video media can be explained through Notoatmodjo's theory which states that health education media functions as a tool in conveying health messages, both through print and electronic media. Video media is included in electronic media that has the advantage of presenting information visually and audio at the same time, making it easier for individuals to understand and remember the information provided.

In addition, according to Contento, the use of video in health counseling can increase the motivation of individuals to receive and remember messages because the presentation is attractive, not monotonous, and involves elements of movement, images, and sound. This allows information to be more easily understood and internalized, potentially influencing changes in health knowledge and behavior.

The results of this study are in line with Nur's (2023) research which shows that there is a significant influence of education using video media on increasing public knowledge about diarrhea, with a p-value of 0.001 (<0.05). The study also showed an increase in the level of knowledge from 70% in the pre-test to 97.5% in the post-test. In addition, the research of Meiranda et al. (2025) also reported an increase in knowledge from 66% to 92% after being educated through animated video media. These findings reinforce that video media is one of the effective educational methods in improving public health knowledge.

The increase in respondents' knowledge in this study can also be influenced by the characteristics of the respondents, especially the work as a housewife which dominates (34.8%). In Green and Kreuter's health promotion theory, the role of individuals in the family is included in reinforcing factors that can affect health behavior. As a household manager, mothers have a responsibility to maintain the health of family members, so they tend to be more motivated to understand information related to disease prevention and treatment.

Thus, it can be concluded that health education through interactive educational videos has a significant and effective influence in increasing public knowledge about handling diarrhea after flooding in the work area of the Tilango Health Center.

CONCLUSION

Before being educated using interactive video media, the level of knowledge of respondents was still in the sufficient category of 41 respondents (59.8%) with an average score (mean) of 14.98.

After being educated using interactive video media, there was a significant increase in the level of knowledge of the respondents with the mean value increasing to 19.12. A total of 68 respondents (98.6%) were in the category of good knowledge, which shows that almost all respondents experienced an increase in understanding after the intervention was given.

The results of the Wilcoxon test showed a P-value = 0.000 (< 0.05), which means that there is a significant influence between the provision of interactive video education on the improvement of respondents' knowledge.

ADVICE

For the Community

The public, especially mothers with children, are advised to be more active in accessing and utilizing interactive video-based health education media as a source of information related to the initial handling of post-flood diarrhea. In addition, the community is expected to be able to apply the knowledge gained in daily life to prevent complications and reduce the incidence of diarrhea after the disaster.

For Health Workers

Health workers are advised to integrate interactive educational video media in health counseling activities, especially in emergency and post-disaster conditions. The use of audiovisual media is expected to increase the effectiveness of information delivery and help the public understand health messages more quickly and accurately.

For Health Agencies and Local Governments

Health agencies and local governments are expected to develop digital media-based health promotion programs systematically and sustainably, especially in disaster-prone areas. In addition, policy support and the provision of facilities and infrastructure are needed to support the implementation of technology-based education in improving community preparedness for post-flood disease risks

For the next researcher

Researchers are then advised to examine not only aspects of knowledge, but also health attitudes and behaviors more comprehensively in order to obtain a comprehensive picture of behavior changes. In addition, further research is expected to consider factors that affect outcomes, such as education level, experience, access to information, and social support. It is also recommended to use a more robust research design, such as the addition of a control group or a longer follow-up period , to assess the long-term sustainability of the effects of interactive video education.

REFERENCES

Abd, G., Siti, Y., & Hutagaol, L. O. (2019). The effect of health education on improving parents' knowledge about diarrhea management in children. Journal of Life Birth, 90–98.

Academy of Disaster Reduction and Emergency Management (ADREM), & IFRC. (2023). 2022 Global Natural Disaster Assessment Report.

Ajzen, I. (2020). The theory of planned behavior: Frequently asked questions. Human Behavior and Emerging Technologies, 2(4), 314–324.

Alyafei, A., & Easton-Carr, R. (2025). The Health Belief Model of behavior change.

BNPB. (2023). Indonesian Disaster Data Book 2023.

Gorontalo Regency Health Office. (2025). Data on diarrhea in Gorontalo Regency in 2025.

Green, L. W., & Kreuter, M. W. (2016). Health program planning: An educational and ecological approach (4th ed.). McGraw-Hill Education.

Liu, Q., Du, M., Wang, Y., Deng, J., Yan, W., Qin, C., Liu, M., & Liu, J. (2024). Global, regional and national trends and impacts of natural flood 1990–2022. Bulletin of the World Health Organization, 102(6), 410–420.

Maryam, S. (2024). Media in adolescent health services: Literature review.

Mawan, A., Indriwati, S. E., & Suhadi. (2022). Development of a clean living behavior counseling video on public knowledge in tackling diarrheal diseases. Journal of Education, 2(7), 883–888.

Meiranda, S., Patroni, R., & Darwis. (2025). The effect of lectures with animated video media on maternal knowledge and attitudes in the prevention of diarrhea. PROMKS Journal.

Meutia, Z., Zara, N., & Putri, B. I. (2024). The influence of health promotion media on maternal knowledge in handling diarrhea in children after the flood. Scientific Journal of Medical and Health Students.

Nugroho, R., & Santoso, B. (2022). Learner engagement in interactive video-based health education. Indonesian Journal of Medical Education, 11(2), 85–92.

Nur Indang, V. D. (2023). The effect of health counseling through video media on the level of knowledge and public behavior about diarrhea prevention.

Oviana, L., Sangga, P., Tonapa, E., & Y. P. T. (2025). The influence of video media on the improvement of knowledge and skills in the prevention of diarrhea. Insology, 4(4), 1087–1095.

Tilango Health Center. (2025). Diarrhea data for the Tilango Health Center community in 2025.

Rojuaniah. (2022). Organizational culture change. Scientific Forum, 9(2), 121–132.

Sayati, D., & Murni, N. S. (2024). Factors related to PHBS.

Soleha, W. M., Nugraheni, W. T., & Sumiatin, T. (2024). The mother's level of knowledge about the prevention and early management of diarrhea.

Valentine, H., Watts, H., & Nelly, S. (2025). The influence of health education on maternal knowledge through video in diarrhea management.

World Health Organization. (2024). Diarrhoeal disease.

Yazdi, M. S., et al. (2024). Infectious diarrhea risks as a public health emergency in floods: A systematic review and meta-analysis. Archives of Academic Emergency Medicine.