



Research Article

**Application of Mock Drills and Early Warning Systems in Tackling Flood Disasters through Interpersonal Communication in Anambra State**

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About Article

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ABSTRACT

Flood disasters have continued to pose serious threats to lives, property and livelihoods in many flood-prone communities in Anambra State, Nigeria. Despite the availability of early warning information, inadequate community preparedness and limited public participation have continued to increase vulnerability to flooding. This study examined the application of mock drills and early warning systems in tackling flood disasters through interpersonal communication in Anambra State. Specifically, the study determined the extent to which interpersonal communication facilitates the application of mock drills, examined its effectiveness in the dissemination and utilisation of early warning systems, assessed the influence of mock drills on community preparedness, and determined the influence of early warning systems on flood disaster preparedness. The study was anchored on the Diffusion of Innovations Theory. A survey research design was adopted, while the study was conducted in five flood-prone Local Government Areas of Anambra State, namely Ogbaru, Anambra West, Anambra East, Ayamelum and Awka North. The study population comprised 1,389,938 residents, from which a sample size of 384 was determined using the Krejcie and Morgan (1970) sample size table. A multistage sampling technique was employed to select the respondents. Data were collected using a structured questionnaire, of which 372 copies (96.9%) were validly returned and analysed. Descriptive statistics comprising frequency counts, percentages and mean scores were used to answer the research questions, while chi-square ( $\chi^2$ ) was employed to test the hypotheses at the 0.05 level of significance. The findings revealed that interpersonal communication facilitates the application of mock drills to a high extent (Grand Mean = 3.22), is highly effective in the dissemination and utilisation of early warning systems (Grand Mean = 3.24), while mock drills (Grand Mean = 3.27) and early warning systems (Grand Mean = 3.29) significantly enhance community preparedness for flood disasters. The study concludes that integrating interpersonal communication with mock drills and early warning systems strengthens community preparedness, promotes timely protective actions and enhances resilience against flood disasters in Anambra State. The study recommends regular community-based mock drills, strengthened people-centred early warning systems, greater involvement of traditional and religious leaders in disaster communication, and sustained public awareness campaigns to improve flood disaster preparedness.

## Introduction

Flood disasters remain one of the most devastating natural hazards confronting humanity, accounting for significant loss of lives, destruction of infrastructure, displacement of populations and disruption of socio-economic activities across the globe. The increasing frequency and intensity of flood events have been linked to climate change, rapid urbanisation, environmental degradation, deforestation, poor drainage systems and changing precipitation patterns (Intergovernmental Panel on Climate Change, 2023; United Nations Office for Disaster Risk Reduction, 2022). According to the IPCC (2023), extreme rainfall events and riverine flooding are projected to increase in many parts of the world, particularly in developing countries where adaptive capacities remain limited. Floods therefore constitute a major threat to sustainable development, public health, food security and environmental sustainability.

Globally, disaster management has shifted from a reactive approach that focuses mainly on post-disaster relief to a proactive strategy that emphasizes disaster risk reduction, preparedness and resilience building. This paradigm shift was reinforced by the adoption of the Sendai Framework for Disaster Risk Reduction 2015–2030, which advocates strengthening disaster preparedness for effective response through early warning systems, risk communication and community participation (UNDRR, 2015). The framework recognizes that communities equipped with timely information, practical response skills and effective communication mechanisms are more capable of minimizing disaster losses than those relying solely on emergency response after disasters occur.

Nigeria has witnessed recurrent flooding over the years, making floods the country's most common hydro-meteorological disaster. The devastating floods of 2012, 2022 and subsequent years affected millions of people across several states, destroying homes, schools, hospitals, roads, bridges and farmlands while displacing thousands of households (National Emergency Management Agency, 2023). Reports by the Nigeria Hydrological Services Agency (2024) indicate that climate variability, increased rainfall intensity, poor urban planning, blockage of drainage channels and encroachment on floodplains continue to increase the vulnerability of many Nigerian communities to annual flooding. These recurring disasters underscore the need for sustainable preparedness strategies that go beyond emergency relief to include risk communication, early warning dissemination and community-based disaster preparedness.

Among the states most vulnerable to flooding in Nigeria is Anambra State. Owing to its location along the lower basin of the River Niger and the presence of numerous rivers, streams and wetlands, the state experiences seasonal flooding almost every year. Flood-prone local government areas such as Ogbaru, Anambra West, Anambra East, Ayamelum, Awka North and parts of Onitsha North and South frequently experience severe flood incidents during the rainy season (NIHSA, 2024). The consequences include displacement of residents, destruction of agricultural lands, interruption of commercial activities, outbreaks of waterborne diseases and substantial economic losses. The persistent occurrence of flooding in these communities demonstrates the urgent need for more effective preparedness mechanisms capable of reducing disaster risks before

floodwaters arrive.

One of the globally recognised approaches to disaster preparedness is the implementation of Early Warning Systems (EWS). The UNDRR (2022) defines an early warning system as an integrated set of capacities for generating, disseminating and responding to timely and meaningful warning information that enables individuals, communities and organisations threatened by hazards to prepare and act appropriately. An effective early warning system consists of four interrelated elements: disaster risk knowledge, hazard monitoring and forecasting, communication and dissemination of warnings, and community response capability (UNDRR, 2022). The effectiveness of these components depends largely on whether warning information reaches vulnerable populations promptly, is clearly understood and leads to appropriate protective actions.

Complementing early warning systems are mock drills, which serve as practical simulation exercises designed to prepare individuals and communities for disaster situations before actual emergencies occur. Mock drills provide opportunities to test emergency plans, evaluate institutional preparedness, identify operational weaknesses and improve coordination among stakeholders (International Federation of Red Cross and Red Crescent Societies, 2021). They also expose community members to realistic disaster scenarios, familiarise them with evacuation procedures, emergency shelters and rescue operations, and strengthen public confidence in disaster management institutions. Repeated simulation exercises contribute significantly to behavioural change by transforming theoretical knowledge into practical response skills.

Although technological innovations have considerably improved disaster prediction and hazard monitoring through meteorological satellites, hydrological models, Geographic Information Systems (GIS), mobile technologies and automated forecasting systems, evidence suggests that technology alone cannot prevent disaster losses. Rather, the effectiveness of these technologies depends on how well the generated information is communicated to those at risk (World Meteorological Organization, 2023). Warning information that is delayed, misunderstood or ignored often results in avoidable casualties and property damage. Consequently, communication has become an indispensable component of disaster preparedness and community resilience.

Within disaster communication scholarship, interpersonal communication occupies a strategic position because of its capacity to facilitate direct interaction, immediate feedback, clarification and trust-building among community members. According to Everett M. Rogers (2003), interpersonal communication is particularly effective in influencing behavioural change because it allows individuals to exchange ideas, resolve uncertainties and reinforce social norms through face-to-face interactions. Similarly, health and disaster communication scholars argue that interpersonal communication increases message credibility because information is often transmitted through trusted opinion leaders, family members, community leaders, religious institutions and local volunteers (Covello, 2021).

In flood-prone communities, interpersonal communication occurs through community meetings, village assemblies, religious gatherings, neighbourhood associations,

market groups, traditional rulers, extension workers and emergency volunteers. These local communication networks facilitate rapid dissemination of flood warnings while allowing residents to seek clarification, verify information and collectively decide on appropriate response actions. Unlike one-way communication channels such as radio or television, interpersonal communication promotes dialogue, participation and community ownership of disaster preparedness activities. It therefore enhances public understanding of flood risks and increases the likelihood that residents will comply with evacuation instructions and other safety measures.

The integration of interpersonal communication into mock drills and early warning systems has become increasingly important within community-based disaster risk reduction programmes. During mock drills, emergency officials and trained facilitators interact directly with residents to explain evacuation procedures, demonstrate emergency responses and correct misconceptions regarding flood hazards. Similarly, interpersonal communication strengthens early warning systems by ensuring that warning messages are translated into local languages, contextualised within community realities and reinforced through trusted social networks. Such interactions improve risk perception, encourage preparedness behaviour and strengthen community resilience before disasters occur (UNDRR, 2022).

Despite the growing emphasis on disaster preparedness in Nigeria, several studies have observed that many flood-prone communities still experience inadequate preparedness due to weak communication systems, low public

awareness, limited community participation and insufficient simulation exercises (Adelekan, 2020; Nkwunonwo, Whitworth, & Baily, 2020). In Anambra State, although government agencies and humanitarian organisations frequently issue seasonal flood alerts, many residents either receive warning information too late, underestimate the severity of impending floods or fail to translate warning messages into appropriate protective actions. These communication gaps continue to increase community vulnerability and reduce the effectiveness of disaster preparedness interventions.

Furthermore, existing studies on flood disaster management in Nigeria have concentrated largely on hydrological forecasting, environmental factors, vulnerability assessment and emergency response, with relatively limited attention devoted to the combined application of mock drills, early warning systems and interpersonal communication as integrated preparedness strategies. This creates an important knowledge gap, particularly in flood-prone states such as Anambra where community participation remains central to effective disaster risk reduction.

Against this background, this study investigates the application of mock drills and early warning systems in tackling flood disasters through interpersonal communication in Anambra State. Specifically, the study seeks to examine how interpersonal communication facilitates the implementation of mock drills, enhances the dissemination and understanding of early warning information, promotes community preparedness and strengthens disaster response capacity in flood-prone communities. It is expected that the findings

will contribute to the advancement of disaster communication scholarship while providing practical recommendations for policymakers, emergency management agencies, community leaders and development practitioners involved in flood disaster risk reduction in Nigeria.

### **Statement of the Problem**

Flooding has become a recurring environmental disaster in Anambra State, causing loss of lives, destruction of property, displacement of residents and disruption of socio-economic activities. Despite annual flood forecasts and preparedness campaigns by agencies such as the Nigeria Hydrological Services Agency, National Emergency Management Agency and Anambra State Emergency Management Agency, many flood-prone communities continue to experience severe flood impacts, indicating that existing preparedness measures have not achieved the desired level of effectiveness.

Although early warning information is regularly disseminated through the media and government agencies, many residents either receive the information late, misunderstand it or fail to take appropriate preventive actions. Similarly, mock drills, which are internationally recognised as effective disaster preparedness tools, are rarely conducted in many vulnerable communities or are implemented with limited community participation. Consequently, many residents lack practical knowledge of evacuation procedures and emergency response during flood disasters.

Furthermore, existing flood preparedness efforts have focused largely on technological warning systems and mass media campaigns, with less attention given to interpersonal

communication, which promotes dialogue, trust and community participation. Likewise, previous studies have examined early warning systems and flood management separately, with little emphasis on their combined application through interpersonal communication in Anambra State. This study therefore seeks to examine how the application of mock drills and early warning systems through interpersonal communication can enhance community preparedness and reduce the impact of flood disasters in Anambra State.

### **Objectives of the Study**

The broad objective of this study is to examine the application of mock drills and early warning systems in tackling flood disasters through interpersonal communication in Anambra State.

The specific objectives are to:

1. Determine the extent to which interpersonal communication facilitates the application of mock drills for flood disaster preparedness in Anambra State.
2. Examine the effectiveness of interpersonal communication in the dissemination and utilisation of early warning systems among residents of flood-prone communities in Anambra State.
3. Assess the influence of mock drills on community preparedness for flood disasters in Anambra State.
4. Determine the influence of early warning systems on community preparedness for flood disasters in Anambra State.

### **Research Questions**

The study was guided by the following research questions:

1. To what extent does interpersonal

communication facilitate the application of mock drills for flood disaster preparedness in Anambra State?

2. How effective is interpersonal communication in the dissemination and utilisation of early warning systems among residents of flood-prone communities in Anambra State?
3. What is the influence of mock drills on community preparedness for flood disasters in Anambra State?
4. What is the influence of early warning systems on community preparedness for flood disasters in Anambra State?

### **Theoretical Framework**

The Diffusion of Innovations (DOI) Theory was developed by Everett M. Rogers in 1962 and has remained one of the most influential theories in communication, sociology, public health and development studies. The theory was subsequently revised in several editions of Rogers' seminal work, with the fifth edition published in 2003 serving as the most widely cited version. Rogers (2003) defines diffusion as the process by which an innovation is communicated through certain channels over time among members of a social system. The theory seeks to explain why some innovations are adopted rapidly while others spread slowly or are rejected altogether. Since its development, the theory has been extensively applied in agriculture, healthcare, environmental management, public health campaigns, climate change adaptation, disaster risk reduction and emergency management (Rogers, 2003).

According to Rogers (2003), diffusion involves four fundamental elements: the innovation, communication channels, time and the social system. These elements interact

to determine how quickly an innovation is accepted within a community. An innovation refers to any idea, practice or technology perceived as new by members of a social system. Communication channels are the means through which information concerning the innovation is transmitted. Time refers to the period required for adoption, while the social system comprises individuals, groups and institutions that collectively influence acceptance or rejection of the innovation.

Within the context of disaster management, innovations include early warning systems, evacuation procedures, emergency preparedness plans, flood forecasting technologies, community disaster education and mock drills. These innovations are introduced with the expectation that they will reduce disaster risks and improve community resilience. However, their effectiveness depends largely on whether community members understand, accept and consistently adopt them. Rogers (2003) argues that adoption is influenced not only by the characteristics of the innovation but also by communication processes occurring within the community.

The theory further identifies five perceived attributes of innovations that influence adoption. These are relative advantage, compatibility, complexity, trialability and observability (Rogers, 2003). Relative advantage refers to the degree to which an innovation is perceived as superior to existing practices. Compatibility describes how consistent the innovation is with existing beliefs, experiences and cultural values. Complexity refers to the extent to which an innovation is perceived as difficult to understand or implement. Trialability concerns the opportunity to test an innovation

before full adoption, while observability refers to the visibility of the innovation's outcomes. Innovations possessing these characteristics are generally adopted more rapidly than those lacking them.

Applied to flood disaster preparedness, mock drills demonstrate a clear relative advantage by allowing residents to practise emergency responses before real disasters occur. They are trialable because community members can participate in simulated exercises without facing actual danger. Likewise, the benefits of early warning systems become observable when timely warnings reduce casualties and property losses during flood events. Where communities perceive these preparedness strategies as useful, culturally appropriate and easy to implement, adoption becomes more likely (Rogers, 2003).

Another important contribution of DOI is its classification of adopters into innovators, early adopters, early majority, late majority and laggards. Innovators are willing to experiment with new ideas despite uncertainty, while early adopters serve as respected opinion leaders whose behaviour influences others. The early majority adopt innovations after careful observation, whereas the late majority often require social pressure before acceptance. Laggards are generally resistant to change and tend to adopt innovations only when they become unavoidable (Rogers, 2003).

This classification has important implications for disaster preparedness programmes. Community leaders, traditional rulers, teachers, religious leaders and emergency volunteers often function as early adopters who influence the willingness of other residents to participate in mock drills or respond appropriately to flood warnings.

When respected community members actively support preparedness initiatives, other residents are more likely to follow their example. Recent studies on emergency warning diffusion similarly show that information spreads through a combination of official communication and informal interpersonal networks, with peer-to-peer communication becoming increasingly important after the initial dissemination of warnings. ([ResearchGate](#))

The theory also recognises the significance of social systems in shaping adoption behaviour. Individuals rarely make decisions independently; rather, they are influenced by prevailing community norms, cultural values and interpersonal relationships. Rogers (2003) notes that social systems determine acceptable behaviour and influence whether innovations are perceived positively or negatively. Consequently, disaster preparedness programmes that involve local institutions, community associations and traditional leadership structures are generally more successful than programmes relying solely on government directives.

Contemporary disaster risk reduction literature supports this proposition. The United Nations Office for Disaster Risk Reduction (2022) emphasises that effective disaster preparedness requires people-centred early warning systems that combine scientific forecasting with local participation, community ownership and trusted communication networks. Similarly, the World Meteorological Organization (2023) argues that early warning systems are effective only when warning information reaches vulnerable populations in forms they understand and trust. These recommendations reinforce Rogers' assertion that interpersonal

communication remains indispensable for successful innovation adoption. ([riskpacc.eu](http://riskpacc.eu))

Recent research on emergency warning diffusion has further demonstrated that warning messages spread through two complementary mechanisms. The first is vertical diffusion, in which official institutions disseminate information through television, radio, mobile phones and government alerts. The second is horizontal diffusion, whereby individuals who receive warning information subsequently share it with neighbours, friends and relatives through interpersonal communication and social networks. Evidence indicates that after the initial warning, horizontal diffusion rapidly becomes the dominant means of information dissemination, highlighting the importance of interpersonal communication in emergency situations. ([ResearchGate](https://www.researchgate.net))

The increasing recognition of community-based disaster risk reduction also supports the assumptions of the Diffusion of Innovations Theory. Modern disaster management has shifted from top-down emergency response to participatory approaches that encourage local ownership of preparedness activities. Community-based disaster risk reduction recognises that sustainable resilience is achieved when residents actively participate in preparedness planning, simulation exercises and risk communication rather than functioning merely as recipients of government assistance. ([dokumen.pub](http://dokumen.pub))

Within the context of this study, mock drills and early warning systems constitute innovations designed to improve flood preparedness among residents of flood-prone communities in Anambra State. Their

successful implementation depends on effective communication strategies capable of creating awareness, reducing uncertainty and encouraging behavioural change. Interpersonal communication serves this purpose by enabling emergency officials, community leaders, religious institutions and neighbourhood associations to explain preparedness procedures, clarify misconceptions and motivate community participation. As more residents adopt these preparedness practices, the innovations gradually diffuse throughout the community, strengthening collective resilience against flooding.

The Diffusion of Innovations Theory is therefore highly relevant to this study because it explains the communication processes through which mock drills and early warning systems become accepted and institutionalised within flood-prone communities. It also highlights the importance of interpersonal communication as the principal channel through which preparedness innovations move beyond awareness to actual adoption and sustained use. The theory consequently provides a suitable framework for understanding how interpersonal communication can enhance the effectiveness of mock drills and early warning systems in tackling flood disasters in Anambra State.

## Literature Review

### Integration of Mock Drills and Early Warning Systems through Interpersonal Communication in Tackling Flood Disasters

The integration of mock drills and early warning systems through interpersonal communication has become central to contemporary flood disaster preparedness. Flood disasters are no longer managed

effectively through reactive relief measures alone; rather, global disaster risk reduction practice now emphasises preparedness, risk awareness, early warning, simulation exercises and community participation (UNDRR, 2022; WMO & UNDRR, 2022). Early warning systems are particularly important because they provide timely information that enables individuals and communities to take preventive action before flood events occur (IFRC, 2020; WMO, 2023). However, the effectiveness of these systems depends not only on the accuracy of forecasts but also on how warning information is communicated, understood, trusted and acted upon by vulnerable populations (Trogrlić et al., 2022; Fakhruddin et al., 2015).

Scholars have argued that early warning systems must be people-centred rather than technology-centred. This means that warning systems should involve communities in risk identification, message dissemination, preparedness planning and response action (IFRC, 2022; Macherera & Chimbari, 2016). The International Federation of Red Cross and Red Crescent Societies explains that community early warning systems work best when local people participate actively in monitoring risks, sharing warnings and organising responses (IFRC, 2020). Similarly, UNDRR (2022) maintains that disaster risk reduction becomes more effective when communities are not treated as passive receivers of information but as active participants in disaster preparedness and resilience-building. This position is relevant to flood-prone communities in Anambra State where residents' understanding, trust and response to flood warnings can determine the level of damage suffered during flooding.

Mock drills complement early warning

systems by converting warning information into practical preparedness behaviour. A mock drill is a simulation exercise through which individuals, institutions and communities rehearse what they should do before, during and after a disaster. In flood disaster management, mock drills help residents practise evacuation, identify safe routes, understand emergency signals, test communication channels and improve coordination among emergency agencies, community leaders and residents (Practical Action, n.d.; IFRC, 2020). Through repeated drills, communities become more familiar with emergency procedures, thereby reducing panic and confusion during actual flood incidents. This agrees with Fakhruddin, Kawasaki and Babel (2015), who argue that flood early warning becomes more useful when communities understand the warning and have the capacity to respond appropriately.

Interpersonal communication is the link that connects early warning information and mock drill participation to actual community action. Disaster warnings are often issued through official channels such as radio, television, mobile alerts, meteorological reports and government announcements. However, people usually interpret and verify such messages through interpersonal networks, including family members, neighbours, religious leaders, traditional rulers, youth leaders, community associations and local volunteers (Macherera & Chimbari, 2016; Trogrlić et al., 2022). This is why interpersonal communication is critical in flood preparedness: it allows immediate feedback, clarification, persuasion and trust-building. Where residents do not understand official warnings, interpersonal interaction can translate technical information into local

languages and practical instructions.

Nwafor's study on flood risk awareness information in Southeast Nigeria is particularly relevant to this discussion. Nwafor (2021) found that flood risk awareness information influences adaptive behaviour among residents in flood-prone areas, especially when such information is available, accessible and capable of diffusing through the community. The study also showed that access to flood risk information is important in encouraging residents to adopt safer behaviours before and during flood disasters (Nwafor, 2021). This finding supports the argument that early warning systems cannot be effective unless warning messages move beyond official release to actual community understanding and behavioural response. In the context of Anambra State, this implies that flood warnings must be supported by interpersonal communication channels that can persuade residents to prepare, evacuate or participate in mock drills.

The importance of interpersonal communication is also evident in studies on flood risk communication and community response. Ben-Enukora (2025) explains that flood risk communication helps people identify flood-prone locations, receive alerts and take precautionary measures to reduce disaster impact. Similarly, studies on flood early warning communication show that warning effectiveness is reduced when messages are unclear, delayed, distrusted or disconnected from community realities (Fakhrudin et al., 2015; Trogrlić et al., 2022). In Nigeria, communication gaps have remained a major challenge in flood preparedness because many rural residents depend on local leaders and informal networks

rather than formal institutional channels for disaster information (Nwafor, 2021; Ben-Enukora, 2025).

The integration of mock drills and early warning systems through interpersonal communication therefore offers a practical pathway for strengthening flood disaster preparedness. Early warning systems provide the information; mock drills provide the rehearsal; interpersonal communication provides the trust, clarification and mobilisation needed for community response. When traditional rulers, town union leaders, religious leaders, women groups, youth groups and emergency volunteers are involved in warning dissemination and drill organisation, residents are more likely to participate and comply with safety instructions (IFRC, 2022; UNDRR, 2022). This supports the people-centred approach to disaster risk reduction, which emphasises local participation, community ownership and continuous preparedness rather than one-way information delivery.

In Anambra State, this integrated approach is especially necessary because several riverine communities experience seasonal flooding. Annual warnings from agencies such as NIHSA and NEMA may create awareness, but awareness alone may not produce preparedness if residents do not understand the warning, trust the source or know what action to take. Mock drills conducted through interpersonal communication can bridge this gap by helping residents rehearse evacuation, understand safe shelters, protect vulnerable persons and coordinate response before flooding occurs. Therefore, the successful application of mock drills and early warning systems in tackling flood disasters depends largely on sustained interpersonal engagement

with affected communities.

In summary, literature shows that early warning systems, mock drills and interpersonal communication are mutually reinforcing components of flood disaster preparedness. Early warning systems alert communities to impending danger; mock drills build practical response capacity; interpersonal communication ensures that warning messages are trusted, understood and translated into action. Based on the works of Nwafor (2021), Fakhrudin et al. (2015), Macherera and Chimbari (2016), Trogrlić et al. (2022), IFRC (2020, 2022), WMO (2023) and UNDRR (2022), it is clear that flood disaster management in Anambra State requires a community-centred communication approach that combines forecast information, simulation exercises and interpersonal mobilisation.

### **Methodology**

This study adopted a survey research design to investigate the application of mock drills and early warning systems in tackling flood disasters through interpersonal communication in Anambra State. The study was carried out in five flood-prone Local Government Areas (LGAs) of the state, namely Ogbaru, Anambra West, Anambra East, Ayamelum and Awka North, selected because they are consistently identified as highly vulnerable to seasonal flooding by the Nigeria Hydrological Services Agency and flood vulnerability studies. The study population comprised the estimated population of these LGAs based on recent projections: Ogbaru (483,826), Anambra West (297,655), Anambra East (223,157), Ayamelum (225,400) and Awka North (159,900), giving a total study population of

1,389,938 persons. Using the Krejcie and Morgan Sample Size Table (1970), a sample size of 384 respondents was considered adequate for the study population. A multistage sampling technique was employed. First, the five flood-prone LGAs were purposively selected. Second, two flood-affected communities were randomly selected from each LGA. Third, households were selected systematically, after which one eligible adult resident (18 years and above) who had experienced flooding was selected from each household using simple random sampling. Data were collected through a structured questionnaire designed by the researcher. The instrument was subjected to face and content validity by experts in Mass Communication and Disaster Risk Management, while its reliability was established through a pilot study using the test-retest method, yielding a reliability coefficient of at least 0.70. Copies of the questionnaire were administered with the assistance of trained research assistants. Data collected were analysed using descriptive statistics, including frequency distributions, percentages, mean scores and standard deviation to answer the research questions, while chi-square ( $\chi^2$ ) was used to test the hypotheses at the 0.05 level of significance. The findings were presented using tables and interpreted in line with the objectives of the study.

### **Data Presentation**

#### **Return Rate of Questionnaire**

A total of 384 copies of the questionnaire were administered to respondents across the selected flood-prone communities in Anambra State. Out of this number, 372 copies were duly completed, returned and found suitable for analysis, while 12 copies were either not

returned or were improperly completed and therefore discarded. This yielded a 96.9% return rate, which is considered adequate for survey research and sufficient for reliable data

analysis. High response rates reduce the likelihood of non-response bias and improve the representativeness of survey findings.

**Table 1: Questionnaire Return Rate**

Questionnaire Status	Frequency	Percentage (%)
Copies administered	384	100.0
Copies returned and valid	372	96.9
Copies not returned/invalid	12	3.1
<b>Total</b>	<b>384</b>	<b>100.0</b>

The validly returned 372 questionnaires formed the basis for the analysis and interpretation of the study findings.

**Answer to Research Questions**

**Research Question One**

**To what extent does interpersonal communication facilitate the application of mock drills for flood disaster preparedness in Anambra State?**

**Table 2: Respondents' Perception of the Extent to which Interpersonal Communication Facilitates the Application of Mock Drills (n = 372)**

S/N	Statement	SA	A	D	SD	Mean	Decision
1	Community meetings encourage residents to participate in flood mock drills.	182	126	42	22	3.26	Accepted
2	Information received from traditional and community leaders increases participation in mock drills.	171	134	45	22	3.22	Accepted
3	Discussions with neighbours and family members motivate residents to take part in mock drills.	164	138	48	22	3.19	Accepted
4	Religious leaders play an important role in mobilising residents for flood preparedness exercises.	153	142	51	26	3.13	Accepted
5	Face-to-face communication enhances understanding of evacuation procedures during mock drills.	189	120	40	23	3.28	Accepted

**Grand Mean = 3.22**

*Decision Rule:* Mean score of 2.50 and above = Accepted, while a mean score below 2.50 = Rejected.

a high extent in Anambra State. The grand mean score of 3.22 shows that respondents generally agreed that interpersonal communication facilitates the application of mock drills for flood disaster preparedness to a significant extent. The findings indicate that interpersonal

communication significantly promotes flood disaster preparedness. The grand mean score of 3.22, which is above the benchmark of 2.50, shows that respondents generally agreed that interpersonal communication significantly promotes flood disaster preparedness to a significant extent. The findings indicate that interpersonal

participation in mock drills. Specifically, respondents agreed that community meetings, interactions with traditional and community leaders, discussions among neighbours and family members, engagement by religious leaders, and face-to-face explanations of evacuation procedures all contribute to improving residents' participation in flood preparedness exercises. Among the items, the statement that face-to-face communication enhances understanding of evacuation

procedures during mock drills recorded the highest mean score (3.28), suggesting that direct interpersonal engagement is particularly effective in improving preparedness. Overall, the result implies that interpersonal communication remains a vital strategy for mobilising residents, increasing awareness, building trust and encouraging active participation in mock drills, thereby strengthening community preparedness for flood disasters in Anambra State.

**Research Question Two**

**How effective is interpersonal communication in the dissemination and utilization of early warning systems among residents of flood-prone communities in Anambra State?**

**Table 3: Respondents' Perception of the Effectiveness of Interpersonal Communication in the Dissemination and Utilization of Early Warning Systems (n = 372)**

S/N	Statement	SA	A	D	SD	Mean	Decision
1	Interpersonal communication helps residents receive flood early warning information promptly.	176	129	43	24	3.23	Accepted
2	Information shared by community leaders increases residents' trust in flood early warning messages.	183	121	44	24	3.24	Accepted
3	Discussions with neighbours and family members improve understanding of flood early warning information.	169	136	45	22	3.22	Accepted
4	Face-to-face communication encourages residents to take appropriate action after receiving flood warnings.	181	125	42	24	3.24	Accepted
5	Interpersonal communication enhances the utilization of early warning information before flood disasters occur.	187	119	42	24	3.26	Accepted

**Grand Mean = 3.24**

Decision Rule: Mean score of 2.50 and above = Accepted, while a mean score below 2.50 = Rejected.

The findings reveal that interpersonal communication is highly effective in the dissemination and utilization of early warning systems among residents of flood-prone communities in Anambra State. The grand mean score of 3.24, which is above the acceptance benchmark of 2.50, indicates that respondents generally agreed that

interpersonal communication enhances both the dissemination and effective use of flood early warning information. The results show that interpersonal communication facilitates the timely receipt of flood warnings, increases trust in warning messages disseminated by community leaders, improves residents' understanding of early warning information

through discussions with family members and neighbours, and encourages appropriate protective actions before flood events occur. The highest mean score (3.26) was recorded for the statement that interpersonal communication enhances the utilization of early warning information before flood disasters occur, indicating that respondents perceive interpersonal communication as an essential factor in translating warning

messages into practical preparedness actions. Overall, the findings suggest that interpersonal communication serves as an effective complement to formal early warning systems by promoting message credibility, improving comprehension, encouraging community dialogue and increasing the likelihood that residents will act promptly on flood warnings, thereby enhancing disaster preparedness in Anambra State.

**Research Question Three**

**What is the influence of mock drills on community preparedness for flood disasters in Anambra State?**

**Table 4: Respondents' Perception of the Influence of Mock Drills on Community Preparedness for Flood Disasters (n = 372)**

S/N	Statement	SA	A	D	SD	Mean	Decision
1	Mock drills improve residents' knowledge of flood evacuation procedures.	190	118	41	23	3.28	Accepted
2	Participation in mock drills increases residents' confidence in responding to flood emergencies.	181	126	43	22	3.25	Accepted
3	Mock drills help reduce panic and confusion during flood disasters.	186	121	42	23	3.27	Accepted
4	Regular mock drills improve coordination among residents and emergency response agencies during floods.	174	132	44	22	3.23	Accepted
5	Communities that participate in mock drills are better prepared for flood disasters than those that do not.	193	117	39	23	3.30	Accepted

**Grand Mean = 3.27**

Decision Rule: Mean score of 2.50 and above = Accepted, while a mean score below 2.50 = Rejected.

Decision Rule: Mean score of 2.50 and above = Accepted, while a mean score below 2.50 = Rejected.

The findings indicate that mock drills have a significant positive influence on community preparedness for flood disasters in Anambra State. The grand mean score of 3.27, which is above the decision benchmark of 2.50, demonstrates that respondents generally

agreed that participation in mock drills enhances flood preparedness. Specifically, respondents agreed that mock drills improve residents' knowledge of evacuation procedures, increase confidence in responding to flood emergencies, reduce panic and confusion during actual flood events, and strengthen coordination between community members and emergency

response agencies. The statement that communities that participate in mock drills are better prepared for flood disasters than those that do not recorded the highest mean score (3.30), indicating strong agreement among respondents on the effectiveness of mock drills in enhancing disaster readiness. Overall, the findings suggest that mock drills play a critical role in strengthening

community preparedness by equipping residents with practical emergency response skills, improving coordination during disasters and fostering confidence in responding effectively to flood emergencies. Consequently, regular mock drills should be integrated into flood disaster preparedness programmes across flood-prone communities in Anambra State.

#### Research Question Four

**What is the influence of early warning systems on community preparedness for flood disasters in Anambra State?**

**Table 5: Respondents' Perception of the Influence of Early Warning Systems on Community Preparedness for Flood Disasters (n = 372)**

S/N	Statement	SA	A	D	SD	Mean	Decision
1	Early warning systems enable residents to prepare adequately before flood disasters occur.	192	118	39	23	3.29	Accepted
2	Timely flood warnings encourage residents to evacuate vulnerable areas before flooding.	186	123	40	23	3.27	Accepted
3	Early warning information helps residents protect lives and valuable property before floods occur.	195	115	39	23	3.30	Accepted
4	Access to early warning information improves community response during flood emergencies.	181	127	41	23	3.25	Accepted
5	Effective early warning systems reduce the impact of flood disasters on affected communities.	198	114	38	22	3.32	Accepted

**Grand Mean = 3.29**

Decision Rule: Mean score of 2.50 and above = Accepted, while a mean score below 2.50 = Rejected.

The findings reveal that early warning systems have a strong positive influence on community preparedness for flood disasters in Anambra State. The grand mean score of 3.29, which is above the benchmark mean of 2.50, indicates that respondents generally agreed that early warning systems significantly enhance flood preparedness. The respondents agreed that early warning systems enable

residents to prepare adequately before floods occur, encourage timely evacuation of vulnerable areas, assist in protecting lives and property, improve community response during flood emergencies and reduce the overall impact of flooding. The statement that effective early warning systems reduce the impact of flood disasters on affected communities recorded the highest mean score

(3.32), reflecting the respondents' strong belief in the effectiveness of early warning systems as a disaster preparedness strategy. Overall, the findings suggest that timely, reliable and accessible early warning systems are essential for improving community preparedness and resilience against flood disasters. The results further imply that strengthening the dissemination and utilization of flood early warning information can significantly reduce disaster risks and improve the safety of residents in flood-prone communities across Anambra State.

### **Discussion of Findings**

#### **Research Question One: Extent to Which Interpersonal Communication Facilitates the Application of Mock Drills for Flood Disaster Preparedness**

The findings of this study revealed that interpersonal communication facilitates the application of mock drills for flood disaster preparedness to a high extent in Anambra State. Respondents agreed that community meetings, discussions with neighbours and family members, interactions with traditional rulers, religious leaders and other opinion leaders significantly enhance participation in mock drills and improve understanding of evacuation procedures. This suggests that interpersonal communication remains an indispensable strategy for mobilising communities, clarifying emergency procedures and encouraging active participation in disaster preparedness activities.

The finding corroborates the position of International Federation of Red Cross and Red Crescent Societies (2020), which maintains that mock drills become more effective when communities are actively

involved through direct communication and participatory engagement rather than relying solely on official announcements. Similarly, United Nations Office for Disaster Risk Reduction (2022) argues that disaster preparedness programmes achieve greater success when local communities participate in planning, simulation exercises and preparedness decision-making through trusted communication networks. Trogrlić et al. (2022) further observed that interpersonal communication increases community confidence in preparedness exercises because residents are able to ask questions, obtain clarification and develop trust in emergency management authorities.

The result equally aligns with the work of Nwafor (2021), who found that flood risk awareness information significantly influences adaptive behaviour among residents of flood-prone communities in Southeast Nigeria. According to Nwafor, effective behavioural change communication increases residents' willingness to adopt disaster preparedness measures because it improves understanding and diffusion of flood risk information. Furthermore, Nwafor and Aghaebe (2025) argued that culturally relevant communication channels, particularly indigenous and interpersonal forms of communication, improve community participation in climate adaptation and resilience initiatives because they promote trust, dialogue and local ownership of adaptation strategies. The present study therefore confirms that interpersonal communication enhances the implementation of mock drills by increasing community participation and preparedness.

### **Research Question Two: Effectiveness of Interpersonal Communication in the Dissemination and Utilisation of Early Warning Systems**

The study found that interpersonal communication is highly effective in the dissemination and utilisation of early warning systems among residents of flood-prone communities in Anambra State. Respondents agreed that communication through community leaders, neighbours, family members and religious leaders improves understanding of warning messages, increases trust in official information and encourages appropriate protective actions before flooding occurs.

This finding agrees with the report of the World Meteorological Organization (2023), which states that the success of early warning systems depends not merely on technological forecasting but on whether warning information reaches vulnerable populations in forms that they understand and trust. Likewise, the Global Status of Multi-Hazard Early Warning Systems published jointly by WMO and UNDRR concluded that community-centred communication significantly improves the utilisation of early warning information because interpersonal channels complement technological dissemination methods. The IFRC (2022) similarly emphasises that people-centred early warning systems encourage active participation, enhance message credibility and increase community response to hazard warnings.

The finding is consistent with the study by Ben-Enukora, Okorie, Ejem and Eze (2023), which reported that interpersonal communication channels, particularly

community leaders, family members and neighbours, were the most trusted sources of flood early warning information among residents of flood-prone communities in Nigeria. Their study further revealed that although awareness of flood warnings was relatively high, effective utilisation depended largely on interpersonal reinforcement and community engagement. Likewise, Turere and Nyaga (2025) found that ineffective interpersonal communication reduced the usefulness of flood warning systems around Kenya's Lake Naivasha because residents lacked adequate pre-disaster engagement despite receiving warning messages. The present finding also reinforces Nwafor's (2021) conclusion that accessibility and diffusion of flood awareness information significantly determine adaptive behaviour among flood-prone residents. Nwafor observed that warning information becomes more effective when it is easily accessible and communicated through trusted interpersonal networks capable of encouraging behavioural change.

### **Research Question Three: Influence of Mock Drills on Community Preparedness for Flood Disasters**

The findings showed that mock drills have a significant positive influence on community preparedness for flood disasters in Anambra State. Respondents agreed that participation in mock drills improves knowledge of evacuation procedures, increases confidence in responding to emergencies, reduces panic during disasters and strengthens coordination between community members and emergency management agencies.

This finding supports the recommendations of the IFRC (2020), which identifies simulation

exercises as essential tools for transforming disaster awareness into practical preparedness skills. The organisation argues that communities that regularly participate in mock drills demonstrate better coordination, faster evacuation and greater resilience during emergencies. Similarly, UNDRR (2022) notes that preparedness exercises strengthen institutional coordination and improve the practical capacities of residents before disasters occur. The finding is also supported by Fakhrudin, Kawasaki and Babel (2015), who reported that flood preparedness interventions become more effective when communities are given opportunities to practise emergency responses before actual disasters. According to the authors, simulation exercises reduce uncertainty and enable residents to translate warning information into concrete protective actions.

The findings equally resonate with the work of Nwafor, Onnoghen, Odoh, Ewa and Anabaraonye (2024), who argued that climate resilience requires continuous public education and participatory communication capable of influencing behavioural change within communities. Although their study focused on eco-musicology as a communication strategy, they concluded that community engagement and repeated communication interventions strengthen resilience against environmental hazards by encouraging preparedness behaviours. Similarly, Nwafor and Aghaibe (2025) emphasised that communication strategies promoting community participation increase resilience because they encourage local ownership of adaptation initiatives. These findings reinforce the present study's conclusion that mock drills improve flood preparedness by equipping residents with

practical response skills and enhancing collective readiness.

#### **Research Question Four: Influence of Early Warning Systems on Community Preparedness for Flood Disasters**

The study established that early warning systems exert a significant positive influence on community preparedness for flood disasters in Anambra State. Respondents agreed that timely warning information enables residents to prepare adequately before flooding, encourages early evacuation, protects lives and property and reduces the overall impact of flood disasters. The finding agrees with the position of the WMO (2023), which states that effective early warning systems remain one of the most cost-effective strategies for reducing disaster losses because they provide sufficient time for protective action before hazards occur. Likewise, UNDRR (2022) argues that communities equipped with reliable early warning information are more resilient because they are able to implement preparedness measures before disasters strike.

The finding also corroborates Trogrlić et al. (2022), who concluded that people-centred early warning systems significantly improve community resilience by integrating scientific forecasting with participatory communication and local knowledge. Similarly, Ben-Enukora et al. (2023) found that although residents had access to flood warning information, preparedness improved substantially when warning messages were communicated through trusted interpersonal networks and accompanied by practical guidance. Furthermore, the findings support Nwafor's (2021) conclusion that flood awareness information significantly predicts adaptive

behaviour among residents of flood-prone communities in Southeast Nigeria. Nwafor established that increased access to flood information enhances preparedness, adoption of mitigation measures and adaptive behaviour before flood disasters occur. The findings are also consistent with Nwafor and Aghaebe (2025), who stressed that effective climate adaptation communication should promote behavioural change through culturally appropriate and community-based communication strategies.

### Conclusion

This study concludes that the effective application of mock drills and early warning systems through interpersonal communication significantly enhances flood disaster preparedness among residents of flood-prone communities in Anambra State. The findings revealed that interpersonal communication serves as a critical medium for mobilising residents, improving participation in mock drills, facilitating the dissemination and utilisation of early warning information, and promoting timely protective actions before flood disasters occur. The study further established that regular mock drills and accessible early warning systems strengthen community resilience by improving evacuation preparedness, reducing panic and fostering coordinated emergency response. It is therefore concluded that integrating interpersonal communication into flood disaster preparedness programmes is essential for reducing flood risks and mitigating the devastating impacts of recurrent flooding in Anambra State.

### Recommendations

Based on the findings of this study, the following recommendations are made:

1. National Emergency Management Agency, Anambra State Emergency Management Agency and Nigeria Hydrological Services Agency should work with community leaders, religious leaders and local associations to improve the dissemination of flood early warning information through interpersonal communication.
2. Regular mock drills should be conducted in flood-prone communities to improve residents' knowledge of evacuation procedures and emergency response.
3. Early warning messages should be disseminated promptly in local languages through both interpersonal communication channels and the mass media to improve public understanding and response.
4. The Anambra State Government should strengthen community-based disaster preparedness programmes by supporting continuous public awareness campaigns and improving flood early warning systems.

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