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FLOOD MANAGEMENT AND HUMANITERIAN CRISIS IN NIGERIA: THE MADAGALI LOCAL GOVERNMENT AREA EXPERIENCE

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Abstract

Flooding has emerged as one of the most devastating environmental hazards in Nigeria, with profound humanitarian implications, particularly in flood-prone rural communities. This study examined the causes of flooding and the resulting humanitarian consequences in Madagali Local Government Area (LGA), Adamawa State, Nigeria, as well as the effectiveness of flood management agencies. A qualitative research design was adopted, involving in-depth interviews with 25 flood-affected households, 5 community leaders, 3 faith-based organization (FBO) representatives, and 2 government officials. Data were analyzed thematically using descriptive interpretation supported by frequency distribution. Findings revealed that flooding in Madagali LGA is driven by a combination of excessive rainfall and river overflow, blocked drainage due to poor waste disposal, deforestation, and unregulated settlement on floodplains. The humanitarian consequences were severe and multidimensional, including displacement, loss of shelter and livelihoods, food insecurity, health challenges, and psychological trauma. Although government agencies such as National Emergency Management Agency (NEMA) and Adamawa State Emergency Management Agency (ADSEMA) were involved in flood response, their effectiveness was constrained by delayed response, inadequate relief materials, poor coordination, and limited early warning

Keywords: Flooding, humanitarian crisis, disaster management, Madagali LGA, Adamawa State, Nigeria

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systems. Faith-based organizations and community groups played more immediate and trusted roles in relief delivery. The study concludes that flooding in Madagali LGA is both a natural and human-induced disaster, requiring proactive, coordinated, and community-centered interventions. It recommends strengthening environmental management, improving early warning systems, enhancing institutional capacity, and promoting inclusive disaster governance to mitigate future flood-related humanitarian crises.

Introduction

Flooding is one of the most pervasive environmental hazards and a leading cause of humanitarian crises worldwide. In recent decades, its frequency, intensity, and spatial coverage have increased significantly, making it a major concern for governments, humanitarian organizations, development agencies, and affected populations. Flood disasters disrupt human livelihoods, destroy infrastructure, degrade ecosystems, and threaten public health, thereby undermining sustainable development efforts. The growing magnitude of flood-related humanitarian crises has drawn global attention, particularly in developing regions where adaptive capacity and disaster preparedness remain limited.

The increasing incidence of flooding has been attributed to a combination of natural and anthropogenic factors. Climate change has intensified rainfall patterns and extreme weather events, while human activities such as deforestation, illegal mining, poor urban planning, inadequate drainage systems, and settlement expansion into flood-prone areas have exacerbated flood risks. These factors pose serious threats to ecological, social, economic, and health systems, often overwhelming the coping capacities of affected communities. Recent studies have confirmed that unregulated land use and environmental degradation are among the root causes of flooding in many parts of the world, particularly in rapidly urbanizing regions.

According to the International Federation of Red Cross and Red Crescent Societies (IFRC, 2021), flooding is among the most widespread natural hazards globally. Over the past three decades, the average number of climate- and weather-related disasters has increased by nearly 35 per cent. In the last decade alone, extreme weather and climate-related events accounted for about 83 per cent of all recorded disasters, resulting in approximately 410,000 deaths and affecting over 1.7 billion people worldwide. Africa has been disproportionately affected, experiencing more than 2,000 major disaster events during the last three decades, most of which were climate-induced hazards such as floods, droughts, storms, landslides, and cyclones.

In West Africa, recurrent flooding has become a persistent challenge, regularly destroying houses, farmlands, crops, and infrastructure, and degrading land resources. Countries

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such as Nigeria and Côte d'Ivoire experience seasonal floods that threaten the livelihoods of thousands of households, particularly those dependent on agriculture and informal economic activities. Rapid urbanization and population growth in the sub-region further increase exposure to flood risks, as more people settle in low-lying and floodplain areas. These flood events often occur in regions already grappling with insecurity, food shortages, malnutrition, and the adverse impacts of climate change. Flooding also heightens the risk of water-borne diseases, worsens sanitation and hygiene conditions, and places additional pressure on fragile health systems.

Similarly, parts of Central Africa have witnessed severe flood-related impacts, including environmental degradation, food insecurity, and mass displacement. Communities living in flood-prone zones are particularly vulnerable, as floods frequently destroy sources of clean water and sanitation facilities, leading to rapid outbreaks of diseases and further humanitarian challenges (IFRC, 2021). These conditions highlight the close link between flooding and humanitarian crises across the African continent.

In Nigeria, flooding has become one of the most recurrent and devastating natural disasters. The International Organization for Migration (IOM, 2022) reported that with the onset of the rainy season, which typically begins in June, varying degrees of flood-related damage are recorded across the country each year. The northeastern states—Borno, Adamawa, Yobe, Bauchi, and Taraba—are among the most affected, with thousands of people displaced annually. Flooding in these areas has resulted in the destruction of homes, farmlands, and critical infrastructure, leaving many residents homeless, traumatized, and dependent on humanitarian assistance.

Madagali Local Government Area of Adamawa State represents one of the flood-prone communities in northeastern Nigeria where seasonal flooding has intensified humanitarian challenges. The area experiences recurrent flood events that disrupt livelihoods, displace households, increase poverty levels, and strain local response mechanisms. Despite the presence of flood management and emergency response agencies such as the National Emergency Management Agency (NEMA) and the Adamawa State Emergency Management Agency (ADSEMA), flood-related humanitarian crises persist, raising concerns about preparedness, mitigation strategies, and response effectiveness at the local level.

Against this background, this study situates flooding not merely as an environmental problem but as a significant humanitarian issue requiring coordinated management strategies. By focusing on Madagali Local Government Area, the study seeks to contribute to a better understanding of flood management practices and their implications for humanitarian crises in Nigeria, thereby providing insights that can inform policy formulation, disaster risk reduction, and sustainable development efforts.

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Statement of the Problem

Recent studies on environmental hazards indicate a growing risk of flooding in urban and semi-urban areas due to climate change, rapid population growth, deforestation, and inadequate land-use planning. These factors have increased flood vulnerability, particularly where residential buildings are constructed on floodplains and other high-risk zones (C40 Cities Finance Facility Report, 2020). Flooding has therefore become a recurring environmental challenge with severe socio-economic and humanitarian consequences. One of the most critical impacts of flooding in affected areas is the internal displacement of persons, coupled with economic hardship, environmental pollution, and the degradation of natural resources. These consequences pose long-term threats to ecological stability, social systems, and human wellbeing. Africa is among the continents most severely affected by flooding, with numerous communities experiencing repeated losses of lives, property, and livelihoods.

Several studies have examined environmental hazards and flooding in African cities. For instance, the C40 Cities Finance Facility (2020) documented the causes of flooding in Dar es Salaam, while UN-Habitat, in collaboration with Urban Africa Risk Knowledge (2020), investigated risk accumulation in African urban centres. However, despite the growing body of literature on flood hazards, there is a noticeable gap in studies focusing specifically on the humanitarian crises induced by flooding and the effectiveness of mitigation and response efforts at the local government level.

In Madagali Local Government Area of Adamawa State, flooding has continued to pose significant challenges, including displacement of residents, destruction of farmlands and infrastructure, and increased vulnerability to poverty and health risks. Yet, empirical studies examining the causes of flooding, the nature of the humanitarian crises it generates, and the role of flood management agencies in addressing these challenges remain limited. This gap constrains effective policy formulation and intervention strategies.

Therefore, this study seeks to identify the causes of flooding and examine the nature of the humanitarian crises associated with it in Madagali Local Government Area. It also evaluates the role of flood management agencies in controlling floods and supporting affected populations, thereby contributing empirical data to social and environmental studies and informing future research and policy decisions.

Objectives of the Study

The main objective of this study is to examine the causes of flooding and its contribution to humanitarian crises in Madagali Local Government Area of Adamawa State.

The specific objectives are to:

i. identify the major causes of flooding in Madagali Local Government Area;

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ii. examine the nature of humanitarian crises caused by flooding in Madagali Local Government Area;
iii. Evaluate the impact of flood management agencies on the management of flooding and related humanitarian crises in Madagali Local Government Area.

Research Questions

In view of the increasing flood risks and their adverse effects on human and environmental systems in Madagali Local Government Area, there is an urgent need to address the underlying causes and consequences of flooding. To provide solutions to these life-threatening challenges, the study seeks to answer the following research questions:

i. What are the major causes of flooding in Madagali Local Government Area?
ii. What is the nature of the humanitarian crises caused by flooding in Madagali Local Government Area?
iii. How have flood management agencies managed humanitarian crises caused by flooding in Madagali Local Government Area?

Research Hypotheses

The following hypotheses are formulated to guide the study and will be tested at an appropriate level of significance:

i. H_{01}: There is no significant relationship between human activities and the occurrence of flooding in Madagali Local Government Area.
   H_{11}: There is a significant relationship between human activities and the occurrence of flooding in Madagali Local Government Area.
ii. H_{02}: Flooding does not significantly contribute to humanitarian crises in Madagali Local Government Area.
   H_{12}: Flooding significantly contributes to humanitarian crises in Madagali Local Government Area.
iii. H_{03}: Flood management agencies have no significant impact on the management of flood-related humanitarian crises in Madagali Local Government Area.
   H_{13}: Flood management agencies have a significant impact on the management of flood-related humanitarian crises in Madagali Local Government Area.

Research Methodology

This research focused on the causes and consequences of flood on the lives and properties of flood victims in Madagali Local Government Area.

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Area of the Study

The study was conducted in Madagali Local Government Area of Adamawa State, Nigeria. Five (5) political wards were selected for the sole purpose of this research, namely: Duhu/Mayo Wandu, Kopa/Kirchinga, Gulak, SS Vapora and Wagga Ward. These areas were selected because they had suffered high casualties from recent floods and required urgent attention.

Research Design

A qualitative research design was used in this study due to its reliability, comprehensiveness, and effectiveness, and because it was easy to present the findings in the form of themes and sub-themes.

Instrument and Procedure for Data Collection

Oral interviews (open-ended questions) in a structured format were adopted to obtain the necessary data. Most respondents were engaged through face-to-face contact, while those who could not be reached directly for obvious reasons were contacted through phone calls.

Sample Size and Technique

Five (5) households were purposively selected from each study area, making a total of 25 flood victims interviewed. In addition, five community leaders, three faith-based organizations (FBOs), and two government officials were also interviewed based on their relevance and peculiarity to the study.

Method of Data Analysis and Interpretation

Descriptive analysis using themes and sub-themes was used to analyze the humanitarian crises caused by flooding in Madagali Local Government Area.

Results Presentation

This section presents the study findings based on interviews with 25 household respondents, 5 community leaders, 3 Faith-Based Organization (FBO) representatives, and 2 government officials. The analyses are structured around the study objectives and supported with direct quotations to enrich the qualitative depth of the results.

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Table 1: Socio-Demographic Profile of Household Respondents (N = 25)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	17	68%
	Female	8	32%
Age Group (Years)	21–30	4	16%
	31–40	8	32%
	41–50	7	28%
	51 and above	6	24%
Primary Occupation	Farming	19	76%
	Trading	3	12%
	Artisan (e.g., carpentry, masonry)	2	8%
	Civil Servant	1	4%
Years of Residency	Less than 5 years	2	8%
	5–10 years	5	20%
	Above 10 years	18	72%

Table 1 indicates that the majority of respondents were male household heads (68%), reflecting local sociocultural norms in which men often represent households during community engagements. Respondents were predominantly within the economically active age group (31–50 years, 60%), suggesting that flooding directly affects productive livelihoods. Farming was the dominant occupation (76%), highlighting high vulnerability to flood-induced agricultural losses. Most respondents (72%) had lived in the area for over ten years, indicating prolonged exposure to flood risks and environmental change.

Table 2: Themes and Sub-Themes on the Causes of Flooding in Madagali LGA

Theme	Sub-Themes Identified	Summary of Respondent Views
Excessive Rainfall & River Overflow	Overflow of rivers, heavy rainfall	Rainwater exceeded drainage capacity; rivers spilled into settlements.
Blocked Drainage & Poor Waste Disposal	Dumping of waste, clogged waterways	Blocked channels prevented water flow, leading to flooding.
Deforestation & Environmental Degradation	Tree cutting, farming on riverbanks	Loss of vegetation increased runoff and reduced water absorption.
Poor Urban Planning	Building on floodplains, unregulated settlement	Houses were constructed on waterways, worsening exposure to floods.

The findings in table 2 show that flooding in Madagali LGA results from the interaction of natural and human-induced factors. Excessive rainfall and river overflow were the most

frequently cited causes, while blocked drainage and deforestation significantly exacerbated flood severity. Poor urban planning further increased exposure, as many houses were constructed on floodplains, increasing vulnerability.

Table 3: Summary of Humanitarian Crises Experienced by Flood Victims

Theme (Humanitarian Crisis)	Sub-Themes	Frequency of Mention (n = 25 households)	Illustrative Respondent Statements
Loss of Shelter & Displacement	House collapse, temporary relocation	22 (88%)	*"Our house collapsed; we slept in the school building."*
Food Insecurity & Livelihood Loss	Crop destruction, livestock loss, hunger	19 (76%)	*"My entire maize farm was washed away."*
Health Problems & Waterborne Diseases	Diarrhoea, malaria, poor sanitation	17 (68%)	*"Children fell sick because the water was dirty."*
Psychological Distress	Fear, trauma, anxiety	14 (56%)	*"Whenever clouds gather, we panic."*
Damage to Community Infrastructure	Roads washed away, market disruption	12 (48%)	*"We could not access the market because the bridge broke."*
Loss of Household Property	Furniture, foodstuffs, personal items damaged	20 (80%)	*"Everything inside the house was spoiled."*

Table 3 reveals that displacement and loss of shelter were the most severe humanitarian consequences, affecting 88% of households. Food insecurity (76%) and health challenges (68%) were also widespread, reflecting the dependence on agriculture and poor post-flood sanitation conditions. Over half of respondents experienced psychological distress, indicating long-term trauma beyond physical losses.

Table 4: Profile of Health-Related Challenges After Flooding

Type of Health Challenge	Number of Households Reporting	Percentage (%)
Diarrhoea	11	44%
Malaria	15	60%
Skin infections	7	28%
Respiratory symptoms	5	20%
Trauma/Emotional Stress	14	56%

The health impacts of flooding in Madagali Local Government Area were diverse and severe, affecting both physical and mental well-being of the affected households. As

presented in Table 4, malaria emerged as the most prevalent post-flood health challenge, affecting 15 households (60.0%). This high prevalence is closely linked to the proliferation of stagnant water following flood events, which creates favorable breeding sites for Anopheles mosquitoes. Flooding also damaged housing structures, forcing residents to sleep outdoors or in overcrowded shelters, thereby increasing exposure to mosquito bites and heightening malaria transmission risk.

Diarrhoeal diseases were reported by 11 households (44.0%), reflecting significant disruption to water, sanitation, and hygiene (WASH) conditions. Floodwaters contaminated wells, streams, and household water storage facilities, compelling many residents to rely on unsafe water sources. The destruction of latrines and open defecation practices during displacement further increased the risk of faecal–oral disease transmission, particularly among children and the elderly.

Skin infections affected 7 households (28.0%) and were commonly associated with prolonged contact with polluted floodwater and poor personal hygiene conditions in temporary shelters. Respondents reported rashes, fungal infections, and sores, which were exacerbated by limited access to clean water, soap, and medical treatment. Similarly, respiratory symptoms such as cough, catarrh, and breathing difficulties were reported by 5 households (20.0%). These conditions were largely attributed to damp living environments, overcrowding in displacement shelters, and exposure to cold weather following heavy rainfall.

Notably, psychological trauma was reported by 14 households (56.0%), making it the second most prevalent health challenge after malaria. Affected respondents described experiences of fear, anxiety, insomnia, and persistent distress resulting from the sudden loss of homes, livelihoods, and personal belongings. The absence of structured psychosocial support services meant that emotional and mental health needs remained largely unmet, increasing the likelihood of long-term psychological consequences.

Overall, the findings indicate that flooding in Madagali LGA poses a multidimensional public health crisis, extending beyond immediate physical illnesses to include substantial mental health burdens. This underscores the need for integrated post-flood health interventions that combine disease prevention, improved WASH services, access to primary healthcare, and psychosocial support for affected populations.

Table 5: Flood Management Agencies Identified

Agency / Actor	Role Stated by Respondents
NEMA (National Emergency Management Agency)	Distribution of relief materials, assessment visit.
ADSEMA (Adamawa State Emergency Agency)	Local coordination, limited relief delivery.
FBOs (Churches & Mosques)	Shelter, food support, psychosocial help.

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Agency / Actor	Role Stated by Respondents
Local Community Committees	Evacuation, sandbag barriers, communal clearing.
Local Government Authorities	Assessment, limited logistical support.

Flood management and humanitarian response in Madagali Local Government Area involved a combination of governmental, non-governmental, faith-based, and community-level actors, each playing distinct but complementary roles. As shown in Table 5, the National Emergency Management Agency (NEMA) was primarily responsible for post-disaster assessment and the distribution of relief materials such as food items, blankets, and basic household supplies. However, respondents indicated that NEMA's interventions were largely reactive and occurred several days after the flood event, limiting their effectiveness during the critical early response phase.

The Adamawa State Emergency Management Agency (ADSEMA) served as the principal coordinating body at the state level. Its role involved liaising between federal agencies, local authorities, and affected communities. Despite this mandate, the agency's operational capacity was constrained by inadequate funding, limited logistics, and insufficient personnel, which affected the scale and timeliness of its interventions. Consequently, coverage of affected households was uneven, with some communities receiving minimal or delayed assistance.

Faith-based organizations (FBOs) played a crucial humanitarian role, particularly in the immediate aftermath of flooding. These organizations provided temporary shelter, food supplies, clothing, and psychosocial support to affected households. Respondents consistently reported higher levels of trust in FBOs, attributing this to their rapid response, cultural familiarity, and sustained presence within the communities. FBOs were also noted for addressing emotional and spiritual needs, which were largely overlooked by formal government interventions.

Community groups emerged as the most immediate first responders during flood events. Their roles included evacuation of vulnerable persons, clearing blocked drainage channels, and providing temporary refuge within safer community spaces. Owing to their local knowledge and proximity, community groups responded faster than external agencies, often acting before any formal assistance arrived. However, their efforts were largely voluntary and limited by lack of equipment, technical training, and financial resources.

Overall, the findings demonstrate that although flood management in Madagali LGA involved multiple stakeholders, response effectiveness varied significantly across agencies. Community groups and faith-based organizations were perceived as more responsive, accessible, and socially embedded, while government agencies were

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hindered by bureaucratic delays and resource constraints. This highlights the need for improved coordination, decentralization of disaster response mechanisms, and formal integration of community-based and faith-based actors into flood disaster management frameworks.

Table 6: Perceived Effectiveness of Flood Management Agencies

Response Category	Frequency of Respondents (Households = 25)	Percentage (%)	Summary
Effective	6	24%	Efforts appreciated but limited in scale.
Partially Effective	12	48%	Assistance came late or insufficient.
Ineffective	7	28%	Many victims received no support.

The perceived effectiveness of flood management agencies in Madagali Local Government Area varied among respondents, as presented in Table 6. Only 6 households (24%) rated the efforts of agencies as "effective," indicating that while some interventions were acknowledged and appreciated, they were generally limited in scale and scope. These respondents noted that relief items were delivered but often insufficient to meet the needs of all affected households, highlighting gaps in resource allocation and logistical reach.

A larger proportion of respondents, 12 households (48%), rated agency efforts as "partially effective." This indicates that while some form of assistance was provided, it was either delayed or inadequate relative to the magnitude of the flood disaster. Households reported receiving incomplete relief packages or encountering bureaucratic delays in accessing support, which reduced the overall impact of interventions during the critical post-disaster period. The "partially effective" rating reflects both the recognition of agency effort and the frustration with the limitations in timely and equitable distribution.

Notably, 7 households (28%) perceived flood management agencies as "ineffective," asserting that no meaningful support was received during or after the flood event. These respondents highlighted instances where households were entirely excluded from formal relief activities, underscoring disparities in agency coverage and suggesting systemic weaknesses in targeting, communication, and coordination.

Overall, the findings reveal that less than one-quarter of flood-affected households considered agencies' interventions fully effective, while the majority experienced partial support or none at all. This pattern suggests that current disaster management mechanisms are insufficiently responsive to local needs, and that reliance solely on

government agencies may not adequately address humanitarian outcomes. The results highlight the importance of strengthening agency capacity, improving early warning systems, decentralizing response efforts, and integrating community-based actors to enhance the timeliness, accessibility, and equity of flood response initiatives in Madagali LGA.

Table 7: Types of Relief Received by Flood Victims

Relief Item	Number of Households (25) Benefiting	Percentage (%)
Food Items	18	72%
Temporary Shelter Materials	12	48%
Clothing	10	40%
Mosquito Nets	9	36%
No Relief Received	7	28%

The distribution of relief assistance to flood-affected households in Madagali Local Government Area is summarized in Table 7. Food items were the most commonly received form of relief, benefitting 18 households (72%). This indicates that agencies prioritized immediate nutritional needs to prevent hunger and food insecurity in the aftermath of the disaster. However, while food provision addressed short-term survival needs, it did not comprehensively cover other essential areas of vulnerability.

Temporary shelter materials were provided to 12 households (48%), highlighting a partial response to displacement and housing insecurity caused by floodwaters. Respondents reported receiving items such as tarpaulins and basic construction materials, but in insufficient quantities to accommodate all affected families. This limited coverage underscores the challenges agencies face in addressing the scale of housing destruction following major flood events.

Clothing was distributed to 10 households (40%), primarily targeting children and vulnerable adults who lost personal belongings during the flood. Mosquito nets reached 9 households (36%), indicating some attention to vector-borne disease prevention, although this coverage was inadequate given the high risk of malaria associated with stagnant water in flood-affected areas.

Alarmingly, 7 households (28%) reported receiving no relief at all, reflecting gaps in targeting, logistical constraints, and possibly communication failures between agencies and local communities. The absence of support for these households highlights inequalities in aid distribution and raises concerns about the overall effectiveness and inclusiveness of the flood response strategy.

In summary, while relief efforts in Madagali LGA addressed key survival needs—food, shelter, clothing, and disease prevention—the assistance was unevenly distributed and

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often insufficient. These findings emphasize the need for improved coordination, needs assessment, and resource mobilization to ensure equitable and comprehensive support to all flood-affected households in future disaster events.

Table 8: Community Perception of Agency Response Challenges

Identified Challenge	Frequency (Mentions)	Percentage (%)
Delay in response	16	64%
Insufficient relief materials	14	56%
Poor coordination	10	40%
Lack of early warning systems	9	36%
Political influence in distribution	5	20%

Table 8 presents respondents' perceptions of challenges faced by flood management agencies in Madagali LGA. The most frequently cited challenge was delay in response, reported by 16 households (64%), indicating that timeliness remains a critical issue in disaster management. Insufficient relief materials affected 14 households (56%), suggesting that the scale of aid was inadequate relative to the needs of flood victims.
Other challenges included poor coordination (40%) and lack of early warning systems (36%), highlighting systemic weaknesses in planning and preparedness. Political influence in distribution was mentioned by 5 households (20%), suggesting that aid allocation may sometimes be biased. Collectively, these perceptions point to operational and structural constraints that hinder effective flood response in the community.

Table 9: Summary of Findings on Agency Capacities

Strengths Identified	Weaknesses Identified
Ability to mobilize relief items	Slow response time
Support from FBOs and volunteers	Insufficient resources
Community willingness to cooperate	Poor coordination & planning
Experience handling emergencies	Lack of preventive/mitigation measures

Table 9 provides an overview of the perceived strengths and weaknesses of flood management agencies in Madagali LGA. Among the strengths, agencies were recognized for their ability to mobilize relief items, leveraging support from FBOs and volunteers, and benefitting from community willingness to cooperate. Respondents also noted that agencies possess experience in handling emergencies, which facilitates basic disaster response activities.
However, several weaknesses were highlighted, including slow response times, insufficient resources, and poor coordination and planning. Additionally, agencies were observed to lack preventive and mitigation measures, limiting their capacity to reduce

flood impacts before disasters occur. These findings suggest that while agencies have operational capabilities, structural and resource limitations significantly constrain their overall effectiveness in managing floods.

Discussion of Findings

The study examined the causes of flooding, the resulting humanitarian crises, and the effectiveness of flood management agencies in Madagali Local Government Area, Adamawa State. Findings indicate that flooding is driven by a combination of climatic, ecological, and human-induced factors. Respondents highlighted excessive rainfall and river overflow, consistent with IFRC (2021), which notes that climate variability has increased the frequency and intensity of extreme precipitation events across West Africa. Human activities such as poor waste management, deforestation, and settlement on floodplains further exacerbated flood risk. One respondent observed: "People throw waste into the water channels, so when rain comes it blocks everywhere." Similar patterns of human-induced vulnerability have been reported in Dar es Salaam and other African cities (C40 Cities, 2020; UN-Habitat, 2020). These findings underscore that floods in Madagali are not purely natural phenomena but are socially and environmentally constructed, reflecting significant governance and planning gaps.

The humanitarian impacts of flooding were multidimensional, affecting shelter, livelihoods, health, and psychosocial well-being. A majority of respondents reported house collapse and displacement, with one noting: "Our house fell down and we slept in the school building." Loss of crops and livestock created acute food insecurity, corroborating IOM (2022), which highlights the vulnerability of rural agricultural livelihoods in northeastern Nigeria. Health challenges were widespread, with malaria and diarrhoeal diseases prevalent due to contaminated water, echoing IFRC (2021), which observes that floods amplify waterborne and vector-borne diseases. Psychological distress was also common; as one respondent explained: "Whenever clouds gather, we panic." Similar mental health impacts have been documented in Nigeria and other Sahelian countries (Adelekan, 2016). These results emphasize the need for integrated humanitarian interventions that address both immediate survival needs and longer-term psychosocial support.

The effectiveness of flood management agencies was limited by delays, insufficient resources, and poor coordination. Only 24% of households rated agency responses as effective, with some appreciating the limited assistance provided: "At least they came and brought something small; it showed they remembered us." Nearly half of respondents (48%) rated the response as partially effective due to delays or inadequate relief, while 28% deemed it ineffective, reflecting the exclusion of some communities from aid. These perceptions align with broader assessments of Nigeria's emergency

management system, where reactive approaches, fragmented coordination, and limited early warning capacities constrain effectiveness (Ologunorisa, 2009; NEMA, 2020). Respondents also highlighted weak preventive measures and poor mitigation strategies, underscoring the need for proactive planning and community-inclusive disaster governance.

In synthesis, the findings reveal that flooding in Madagali LGA is a result of both natural and anthropogenic factors, producing complex and interrelated humanitarian crises, while disaster response remains largely reactive and constrained. The study aligns with global and regional literature demonstrating that flood vulnerability is socially constructed, and that effective management requires the integration of ecological protection, infrastructure planning, and strengthened institutional capacity (Adelekan, 2016; UN-Habitat, 2020; IFRC, 2021). Addressing these challenges will require investment in early warning systems, environmental restoration, and coordinated, community-centered disaster management strategies to enhance both preparedness and resilience.

Conclusion

In conclusion, mitigating flood-related humanitarian crises in Madagali LGA requires proactive, multi-dimensional approaches that address both underlying vulnerabilities and immediate hazards. Strengthening institutional capacity, community resilience, and environmental stewardship will reduce future flood risk and enhance the effectiveness of humanitarian response.

Recommendations

Based on the findings, the study recommends the following:

1. **Strengthening Environmental Management:** Implement reforestation programs, riverbank stabilization, and proper waste management to reduce runoff and mitigate flood risk.
2. **Enhancing Urban Planning and Settlement Regulation:** Enforce building codes, prevent construction on floodplains, and develop drainage infrastructure to minimize exposure.
3. **Improving Early Warning Systems:** Establish reliable, community-based early warning mechanisms to ensure timely evacuation and risk communication.
4. **Capacity Building for Agencies:** Provide adequate funding, training, and logistical support to disaster management agencies to improve response speed, coordination, and effectiveness.
5. **Community Engagement:** Encourage participation of local communities and FBOs in disaster preparedness, relief distribution, and mitigation planning.

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Integrated Humanitarian Response: Design multi-sectoral interventions that address shelter, livelihoods, health, and psychosocial needs, ensuring equitable distribution of relief.

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