

Assessment of Residents' Perception of the Causes and Impacts of Flood Disaster in Osun State, Nigeria

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Abstract- *Flood disasters are the most frequent and socioeconomically costly natural hazard in sub-Saharan Africa, but very few studies have focused on community-level preparedness perception, especially in Nigeria states. This study evaluated residents' perception of disaster incidence preparedness in relation to the causes and effects of flood subjecting to its natural characteristic in Osun State, Nigeria. The objectives of the study were to assess residents' perceived causes of flooding in flood-prone communities in Osun State; examine the perceived socioeconomic and public health impacts of flooding and level of flood preparedness among residents in the study area. We used a descriptive cross-sectional survey design and employed a structured questionnaire to collect data from 384 household heads selected from communities in five local government areas of Osun State that are prone to flooding, with 367 usable responses (response rate = 95.6%). Data were analysed using descriptive statistics, chi-square tests and binary logistic regression. Abstract Results indicated that poor drainage infrastructure (82.5), indiscriminate waste disposal (76.3) and unplanned urban development (68.9) were the commonly cited perceived causes of flooding in the area of study. Overall, flood preparedness was low, with just over 34.2% of respondents indicating that they were adequately prepared for a flood, despite the fact that 77.4% of respondents had direct experience. Flooding was considered to trigger disruptions in livelihood (79.1%), displacement (71.4%), and outbreaks of waterborne diseases (65.8%). Flood readiness in Osun state is found to be subsistently low, engendered by structural governance inefficiencies and pervasive socio-economic inequality.*

Keywords: *Flood disaster, Readiness perception, Disaster preparedness, Osun State, Nigeria and Protection Motivation Theory*

I. INTRODUCTION

Floods are the most frequent and costliest weather-related natural hazard in the world, accounting for over one-third of all weather related catastrophic events globally and resulting in dislocation of tens of

millions of people each year (Intergovernmental Panel on Climate Change IPCC, [2021]; United Nations Office for Disaster Risk Reduction UNDRR, [2022]). Climate change is accelerating, and when matched with rapid and often haphazard urbanisation has greatly worsened both flood frequency (number of occurrences) and the duration and magnitude in the developing world especially (Chinedu et al., 2024; Glago, 2021). Floods in sub-Saharan Africa represent about 64% of all disaster events for the region, resulting not only in immediate property damage but also contributing to persistent food insecurity, public health pandemics and aggravating inequality (Adelekan, 2020; Ogele & Adaramola, 2024).

With the largest population and one of the biggest economies in Africa, Nigeria sits at particular risk from this tableau. By 2022 extreme flood events had displaced over 1.4 million people nationally displacing an estimated USD\$ 4.2 trillion in damages (National Bureau of Statistics [NBS], 2023). The 2022 National Hydrological Service Agency [NIHSA] (Annual Flood Outlook [NIHSA], 2022) also detailed high flood probability across 31 states and the Federal Capital Territory, Nigeria. These challenges inhibit preparedness among Nigerian communities who are repeatedly inundated by floods and where drought preparedness is also limited because of poor drainage systems, weak institutional response, low household income and very low public knowledge on risk reduction strategies (Elum & Lawal, 2022; Mfon et al., 2022).

The majority of the reasons for flooding in Nigerian urban and peri-urban areas are largely evidenced-based and anthropogenic. The major cause of urban flooding in Nigeria continues to be poor drainage infrastructure, followed by both indiscriminate

disposal of solid wastes, development in areas which are flood-prone or inadequate consideration for surface runoff from areas recently (and over since) deforested, and these exacerbated by climate change intensification of rainstorm events (Echendu 2023; Nkwunonwo et al., 2022). Although broad frameworks for disaster risk reduction (DRR) are established by the National Emergency Management Agency (NEMA) and state-level emergency management agencies, the molding of these technical arrangements through preparedness close to communities is still marginal in many regions, particularly in southwestern Nigeria (Federal Republic of Nigeria, 2021; Abdulrahman et al., 2025).

Osun State, located in the southwestern geopolitical zone of Nigeria, exemplifies the compound flood vulnerability that characterises many inland Nigerian states. The state, through which the River Osun flows as the dominant hydrological feature, was identified by NIHSA (2022) as a high-probability flood-risk state. Documented flood events in Osogbo, Iwo, and Ede local government areas have displaced families, destroyed farmlands, and triggered disease outbreaks, yet the socioeconomic consequences of these recurrent disasters remain inadequately quantified at the community level (Omotayo et al., 2025; Ogunbode et al., 2025). The gap between the frequency of flood experience and the adequacy of preparedness behaviour among residents of Osun State communities represents a critical evidence gap with direct implications for targeted Disaster Risk Reduction (DRR) policy.

Despite a growing body of flood risk literature in Nigeria, no dedicated empirical study has simultaneously assessed community-level readiness perception, attribution of flood causes, and the socioeconomic and public health impact perceptions specifically for Osun State. Existing studies have focused on Lagos (Adelekan & Asiyanbi, 2021), Rivers State (Elum & Lawal, 2022), Ibadan (Abubakar & Ishola, 2025), and Kogi State (Buba et al., 2025), leaving southwestern inland communities largely under-examined. This study addresses that gap directly.

This study is guided by two objectives and two corresponding research questions:

1. To assess residents' perceived causes of flooding in flood-prone communities in Osun State, Nigeria;
2. To examine the perceived socioeconomic and public health impacts of flooding and the level of flood readiness among residents in the study area.

Correspondingly, the study asks: (1) What are the perceived causes of flooding among residents of flood-prone communities in Osun State, Nigeria? (2) What are the perceived socioeconomic and public health impacts of flooding, and what is the level of flood readiness and preparedness among households in the study area?

II. LITERATURE REVIEW

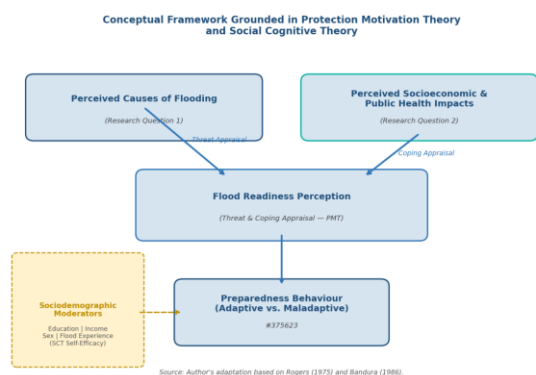
Theoretical Framework

This study is anchored in Protection Motivation Theory (PMT; Rogers, 1975) as its primary theoretical lens, supported by Social Cognitive Theory (SCT; Bandura, 1986). PMT posits that an individual's motivation to protect themselves against a hazard is a function of two parallel cognitive appraisal processes. The first is threat appraisal, which encompasses perceived severity (how harmful the hazard is judged to be) and perceived vulnerability (the individual's subjective assessment of their likelihood of being affected). The second is coping appraisal, which encompasses self-efficacy (belief in one's capacity to perform the protective behaviour) and response efficacy (belief that the protective behaviour will be effective). Together, these four constructs determine whether a person engages in adaptive preparedness behaviour or maladaptive responses such as avoidance or fatalism (Cvetković et al., 2018; Yin et al., 2021).

Within the context of this study, residents' perceived causes of flooding (RQ1) operationalise threat appraisal, as causal attribution reflects judgments about the severity and source of the flood hazard. The level of readiness and the perception of socioeconomic and public health impacts (RQ2) operationalise coping appraisal, as they reflect whether residents believe they can respond effectively and understand the consequences of

inadequate action. SCT complements PMT by emphasising the role of self-efficacy shaped by sociodemographic characteristics, particularly education and income, in determining whether flood awareness translates into preparedness behaviour (Bandura, 1986). This theoretical integration provides the conceptual architecture for the study's design, analysis, and interpretation.

Figure 1. Conceptual Framework Grounded in Protection Motivation Theory and Social Cognitive Theory



Source: Authors' Concept of Flood Readiness and Risk Perception

Concept of Flood Readiness and Risk Perception

Flood readiness refers to the degree to which individuals, households, and communities are cognitively, materially, and behaviourally equipped to anticipate, withstand, and recover from flood events (UNDRR, 2022). Risk perception, a closely related construct, denotes subjective assessments of the probability and severity of harm associated with a given hazard (Slovic, 2000).

Within the flood literature, the relationship between risk perception and preparedness behaviour is consistently mediated by factors including prior flood experience, institutional trust, socioeconomic status, and access to early warning information (Adelekan & Asiyambi, 2021; Iqbal & Nazir, 2023). Communities with heightened and accurate risk perception are more likely to engage in preparedness behaviours; however, this relationship is far from automatic and is substantially moderated by self-efficacy and material capacity (Elum & Lawal, 2022; Kumaresen et al., 2025).

Causes of Flood Disasters in Nigeria

The causes of flooding in Nigeria are multifactorial, spanning biophysical and predominantly anthropogenic dimensions. Poor drainage infrastructure remains the foremost structural driver of urban flooding: the absence or deterioration of drainage systems in rapidly growing Nigerian cities creates conditions under which even moderate rainfall produces inundation (Nkwunonwo et al., 2022). Indiscriminate solid waste disposal compounds this problem by blocking existing drainage channels, a pattern widely observed in southwestern Nigerian cities (Echendu, 2023).

Unplanned urban development reduces permeable land surfaces, increasing surface runoff and accelerating floodwater accumulation (Chinedu et al., 2024). Deforestation and land-use change reduce the absorptive capacity of soils, further intensifying surface runoff during heavy rainfall events (Glago, 2021). At the macroscale, climate change is intensifying rainfall patterns across West Africa, increasing the frequency and magnitude of extreme precipitation events that overwhelm urban drainage systems (IPCC, 2021; Mfon et al., 2022). These causes are not mutually exclusive; they interact to produce the compound flood vulnerability characteristic of Nigerian communities.

Socioeconomic and Public Health Impacts of Flooding

The consequences of flood disasters in Nigeria are multidimensional, spanning acute socioeconomic disruption and protracted public health deterioration. At the household level, floods cause extensive destruction of property, farmlands, and productive assets, resulting in income loss, food insecurity, and involuntary displacement (NBS, 2023; Ogele&Adaramola, 2024). The 2022 national flood disaster, assessed as more damaging than the 2012 event, resulted in widespread household livelihood collapse across affected states (NBS, 2023). Women bear disproportionate burdens, as gender norms concentrate domestic and caregiving responsibilities on them, increasing physical exposure and post-flood vulnerability (Elum & Lawal, 2024). From a public health perspective, stagnant floodwaters facilitate outbreaks of waterborne diseases including cholera, typhoid fever, and malaria, while the disruption of

healthcare access and psychosocial trauma add further dimensions to flood-induced health burden (Obi et al., 2021; Salami et al., 2022).

Flood Readiness and Preparedness in Nigeria

The empirical literature consistently documents low preparedness levels across Nigerian communities, even in those with high flood exposure. In Ibadan, communities were found to be inadequately prepared for floods, with negative outcome expectancy and misplaced trust in structural flood protection measures identified as key explanatory factors (Abubakar & Ishola, 2025). In Kogi State, household preparedness was significantly associated with the gender and educational status of household heads, while access to flood sensitisation resources from government agencies remained poor (Buba et al., 2025). In Rivers State, flood risk perception was positively associated with prior flood experience, but preparedness was substantially constrained by poverty and inadequate government communication (Elum & Lawal, 2022). Across contexts, the barriers to preparedness are consistent: low educational attainment, limited household income, poor early warning system uptake, and governance deficits in disaster risk communication (Abdulrahman et al., 2025; Ndukson et al., 2021).

III. METHODOLOGY

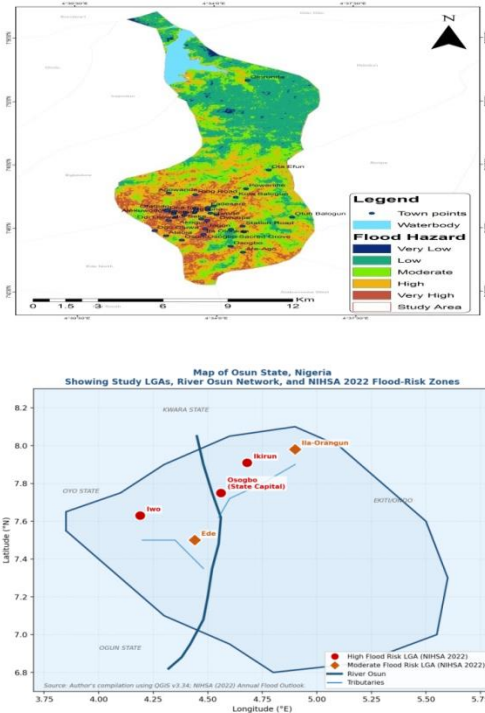
Study Area

Osun State is located in the southwestern geopolitical zone of Nigeria between latitudes 7.0°N and 8.0°N and longitudes 4.0°E and 5.5°E, covering an area of approximately 9,251 km². The state is bounded by Ogun State to the south, Kwara State to the north, Oyo State to the west, and Ekiti and Ondo States to the east. The River Osun, the dominant hydrological feature, flows through the state capital (Osogbo) and several other communities, making riverine flooding a persistent seasonal hazard (Omotayo et al., 2025).

We selected five local government areas for the study: Osogbo, Iwo, Ede, Ikirun, and Ila-Orangun. These five LGAs were purposively selected because they represent the documented flood-risk gradient across urban (Osogbo, Iwo), peri-urban (Ede, Ikirun), and semi-rural (Ila-Orangun) settings in the state, as classified by NIHSA (2022), and they collectively

account for the highest frequency of flood incident reports in Osun State between 2020 and 2024.

Figure 2. Map of Osun State, Nigeria, Showing the Five Study Local Government Areas, Major River Networks, and NIHSA 2022 Flood-Risk Zone Classification



Note. Map produced using QGIS v3.34 with open-source shapefiles and NIHSA (2022) Annual Flood Outlook raster data. Source: Author's compilation (2026). AFO = Annual Flood Outlook; LGA = Local Government Area; NIHSA = Nigeria Hydrological Services Agency.

Research Design

We adopted a descriptive cross-sectional survey design. This design is appropriate because flood readiness perception is a socially situated, time-bound phenomenon that is best captured through structured self-reports across geographically dispersed communities. The cross-sectional approach aligns directly with both research questions, which seek to establish the prevalence of specific perceptions and associations between sociodemographic characteristics and preparedness behaviour at a defined point in time, rather than to trace causal trajectories over time (Creswell & Creswell, 2018).

Sampling Procedure

We used multi-stage stratified random sampling. In Stage 1, we stratified the five LGAs by NIHSA (2022) flood-risk classification (high risk: Osogbo, Iwo, Ikirun; moderate risk: Ede, Ila-Orangun). In Stage 2, we randomly selected flood-prone communities within each LGA from the NIHSA-listed settlements. In Stage 3, we used systematic random sampling to select household heads within each community, applying a calculated sampling interval derived from available census enumeration data. We determined the sample size as $n = 384$ using Yamane's (1967) formula at a 95% confidence level with a $\pm 5\%$ margin of error, based on an estimated study population of 15,000 households across the five LGAs. A total of 367 questionnaires were retrieved and found usable, yielding a response rate of 95.6%.

Data Collection Instrument

We developed a structured questionnaire comprising four sections. Section A captured sociodemographic characteristics including sex, age, educational attainment, occupation, monthly household income, and years of residence in the community. Section B assessed perceived causes of flooding, operationalising Research Question 1. Section C assessed flood readiness and preparedness behaviours, and Section D assessed perceived socioeconomic and public health impacts, together operationalising Research Question 2. Items in Sections B through D were measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). We then pilot-tested the instrument with 30 respondents residing outside the main study communities, and then computed Cronbach's alpha to verify internal consistency (overall alpha = 0.81), confirming the instrument's reliability. We then refined three ambiguous items before commencing full data collection.

Data Analysis

We used descriptive statistics, specifically frequencies, percentages, means, and standard deviations, to summarise sociodemographic characteristics and response distributions for both research questions. We then applied chi-square tests of independence to examine associations between categorical sociodemographic variables and self-reported preparedness adequacy, addressing Research

Question 2. We then conducted binary logistic regression to identify independent predictors of adequate flood preparedness, with preparedness classified as adequate or inadequate based on a composite threshold score. All statistical analyses were performed using IBM SPSS Statistics Version 27, with a significance threshold set at $p < .05$.

Limitations of the Method

This study acknowledges three principal limitations. First, the cross-sectional design precludes causal inference between sociodemographic predictors and preparedness behaviour; the associations reported are correlational. Second, social desirability bias may have led some respondents to overstate their preparedness behaviours. Third, the five-LGA scope, while purposively justified, may not fully represent the diversity of ecological and socioeconomic conditions across all 30 LGAs in Osun State.

IV. RESULTS

Results are organised by research question. Each subsection reports findings only.

Sociodemographic Characteristics of Respondents

Of the 367 usable responses, 214 (58.3%) were male and 153 (41.7%) were female. The majority of respondents were aged between 41 and 71 years ($n = 225$; 61.4%). Secondary education was the most common educational attainment ($n = 156$; 42.5%), followed by tertiary education ($n = 106$; 28.9%). Informal trade was the most frequently reported occupation ($n = 117$; 31.9%), followed by formal sector ($n = 93$; 25.3%). Over 40% of respondents ($n = 148$; 40.3%) earned less than 70,000 Naira per month. More than half of respondents ($n = 194$; 52.9%) had resided in their community for more than 15 years. Full distributions are presented in Table 1.

Table 1 Sociodemographic Characteristics of Respondents (N = 367)

Variable	Category	Frequency (n)	Percentage (%)
Sex	Male	214	58.3
	Female	153	41.7
Age (years)	18-30	76	20.7
	31-50	225	61.4
	51 and above	66	17.9
Education	No formal education	41	11.2
	Primary	64	17.4
	Secondary	156	42.5
	Tertiary	106	28.9
Occupation	Farming	82	22.3
	Informal trade	117	31.9
	Formal sector	93	25.3
	Unemployed	75	20.4
Monthly income (Naira)	Below 70,000	148	40.3
	70,000-199,999	142	38.7
	200,000 and above	77	21.0
Years in community	Less than 5 years	44	12.0
	5-15 years	129	35.1
	More than 15 years	194	52.9

Note. Source: Field survey (2026).

Perceived Causes of Flooding

Poor drainage infrastructure was the most widely endorsed perceived cause of flooding, with 303 respondents (82.5%) either agreeing or strongly

agreeing that it contributed to flooding in their communities. Indiscriminate waste disposal was endorsed by 280 respondents (76.3%), and unplanned urban development by 253 (68.9%). Climate change and intense rainfall were cited by 225 respondents (61.2%), while deforestation and land clearing were identified by 203 (55.4%). River overflow was endorsed by 178 respondents (48.6%), and construction in floodplain areas by 162 (44.1%). Dam water release was the least frequently cited cause (n = 116; 31.7%). Full distributions are presented in Table 2, and the ranked pattern is visualised in Figure 3.

Table 2 Respondents' Perceived Causes of Flooding in Osun State (N = 367)

Causal Factor	Agree/Strongly Agree (%)	Neutral (%)	Disagree/Strongly Disagree (%)	Mean	Standard Deviation
Poor drainage infrastructure	303 (82.5)	38 (10.4)	26 (7.1)	4.21	0.83
Indiscriminate waste disposal	280 (76.3)	44 (12.0)	43 (11.7)	4.07	0.91
Unplanned urban development	253 (68.9)	52 (14.2)	62 (16.9)	3.87	0.98
Climate change / intense rainfall	225 (61.3)	68 (18.5)	74 (20.2)	3.64	1.02
Deforestation and land clearing	203 (55.3)	79 (21.5)	85 (23.2)	3.41	1.08
River overflow	178 (48.5)	88 (24.0)	101 (27.5)	3.27	1.11
Construction in floodplain	162 (44.1)	95 (25.9)	110 (30.0)	3.14	1.13

n areas

Dam water release	116 (31.6)	104 (28.3)	147 (40.1)	2.7	1.9
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Note. Mean scores are based on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). SD = standard deviation. Source: Field survey (2024).

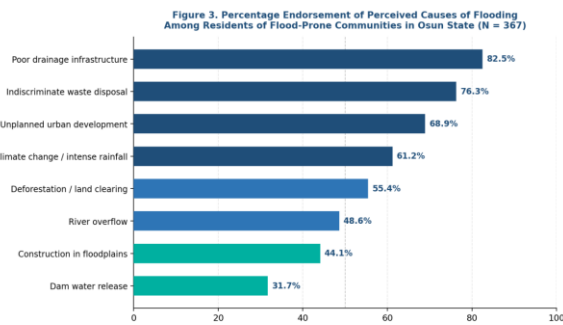


Figure 3. Percentage Endorsement of Perceived Causes of Flooding Among Residents of Flood-Prone Communities in Osun State (N = 367)

Flood Readiness and Preparedness Levels

The majority of respondents had directly experienced flooding (n = 284; 77.4%), yet composite preparedness was classified as adequate for only 126 respondents (34.2%), partial for 148 (40.3%), and inadequate for 93 (25.5%). The most frequently reported preparedness deficit was the absence of an evacuation plan (77.1% reported none), followed by non-membership in community flood response groups (81.2%) and lack of knowledge of the nearest evacuation centre (75.2%). Awareness of early warning channels was comparatively higher (41.7%). The experience-preparedness gap is most pronounced in Osogbo and Iwo LGAs, where flood experience exceeded 85% but adequate preparedness remained below 35%. Tables 3 and Figures 4 and 5 present full preparedness distributions.

Table 3 Flood Readiness and Preparedness Indicators Among Respondents (N = 367)

Preparedness Indicator	Yes n (%)	No n (%)	Mean (1-5)	SD
Prior experience of flooding	284 (77.4)	83 (22.6)	3.91	0.72
Awareness of	153	214	2.67	1.02

early warning channels	(41.7)	(58.3)		
Received flood education or training	115 (31.3)	252 (68.7)	2.31	0.93
Stored emergency supplies	105 (28.6)	262 (71.4)	2.14	0.91
Knowledge of nearest evacuation centre	91 (24.8)	276 (75.2)	2.05	0.88
Household evacuation plan in place	84 (22.9)	283 (77.1)	1.98	0.87
Membership in flood response group	69 (18.8)	298 (81.2)	1.74	0.81

Note. Mean scores are based on a five-point Likert scale (1 = not at all, 5 = very much). SD = standard deviation. Source: Field survey (2026).

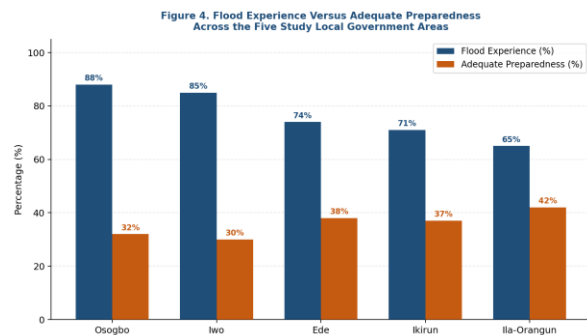


Figure 4. Flood Experience Versus Adequate Preparedness Across the Five Study Local Government Areas

Figure 5. Overall Preparedness Classification of Respondents (N = 367)

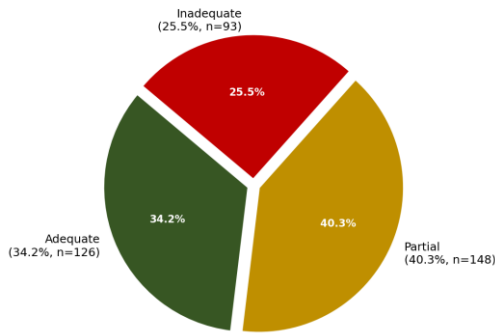


Figure 5. Overall Preparedness Classification of Respondents (N = 367)

Perceived Socioeconomic and Public Health Impacts of Flooding

Livelihood disruption was the most strongly endorsed socioeconomic impact of flooding, with 290 respondents (79.1%) in agreement. Property and asset damage was endorsed by 274 (74.7%), displacement from home by 262 (71.4%), and income or job loss by 247 (67.3%). Disruption of children's schooling was endorsed by 218 respondents (59.4%), and loss of farmland or crops by 204 (55.6%). Among public health impacts, waterborne disease outbreaks were endorsed by 241 respondents (65.8%), psychological distress or trauma by 214 (58.4%), disruption of healthcare access by 189 (51.5%), and injury or death by 161 (43.9%). Gendered disaggregation revealed that female respondents consistently reported higher severity endorsement across all health impact indicators. Table 4 presents the full impact distributions, and Figure 6 visualises the gendered pattern.

Table 4 Perceived Socioeconomic and Public Health Impacts of Flooding (N = 367)

Panel	Impact Indicator	Agree/Strongly Agree n (%)	Neutral n (%)	Disagree/Strongly Disagree n (%)
Socioeconomic	Livelihood disruption	290 (79.1)	41 (11.2)	36 (9.8)
	Property and asset damage	274 (74.7)	48 (13.1)	45 (12.3)

	and asset damage	274 (74.7)	48 (13.1)	45 (12.3)
	Displacement from home	262 (71.4)	53 (14.4)	52 (14.2)
	Income or job loss	247 (67.3)	55 (15.0)	65 (17.7)
	Disruption of schooling	218 (59.4)	64 (17.4)	85 (23.2)
	Loss of farmland or crops	204 (55.6)	70 (19.1)	93 (25.3)
Public Health	Waterborne disease outbreaks	241 (65.7)	63 (17.2)	63 (17.2)
	Psychological distress or trauma	214 (58.3)	72 (19.6)	81 (22.1)
	Disruption of healthcare access	189 (51.5)	74 (20.2)	104 (28.3)
	Injury or death	161 (43.9)	81 (22.1)	125 (34.1)

Note. Source: Field survey (2026).

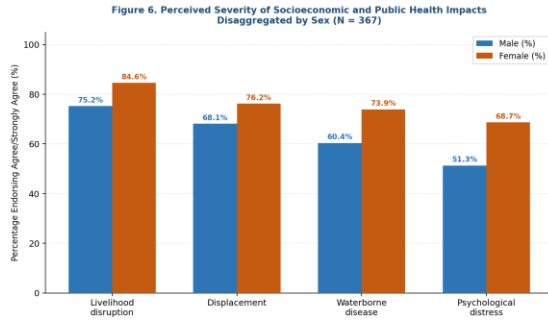


Figure 6. Perceived Severity of Socioeconomic and Public Health Impacts Disaggregated by Sex (N = 367)

Relationship between Sociodemographic Characteristics and Flood Preparedness

Chi-square analyses revealed statistically significant associations between flood preparedness and educational attainment (chi-square = 34.72, df = 3, $p < .001$), monthly household income (chi-square = 27.61, df = 2, $p < .001$), and sex (chi-square = 6.84, df = 1, $p = .009$). Age and years of residence in the community were not significantly associated with preparedness ($p > .05$). Binary logistic regression identified educational attainment at the tertiary level (OR = 2.41, 95% CI [1.63, 3.57], $p < .001$) and monthly income of 200,000 Naira and above (OR = 3.16, 95% CI [1.89, 5.29], $p < .001$) as the strongest independent predictors of adequate flood preparedness. Prior flood experience also significantly predicted adequate preparedness (OR = 1.68, 95% CI [1.05, 2.70], $p = .031$). The model demonstrated satisfactory fit (Hosmer-Lemeshow chi-square = 7.23, df = 8, $p = .51$; Nagelkerke $R^2 = 0.39$). Tables 5 and 6 present the full statistical outputs, and Figure 7 visualises the odds ratios.

Table 5 Chi-Square Analysis: Sociodemographic Characteristics and Flood Preparedness (N = 367)

Variable	Adequate n (%)	Inadequate n (%)	chi-square	df	p-value
Sex					
Male	85 (39.7)	129 (60.3)	6.84	1	.009*
Female	41 (26.8)	112 (73.2)			

Age group					
18-30	28 (36.8)	48 (63.2)	2.17	2	.338
31-50	79 (35.1)	146 (64.9)			
51 and above	19 (28.8)	47 (71.2)			
Educational attainment					
None/Primary	22 (21.0)	83 (79.0)	34.7	3	<.001*
Secondary	45 (28.8)	111 (71.2)			
Tertiary	59 (55.7)	47 (44.3)			
Monthly income (Naira)					
Below 30,000	28 (18.9)	120 (81.1)	27.6	2	<.001*
70,000-199,999	54 (38.0)	88 (62.0)			
200,000 and above	44 (57.1)	33 (42.9)			
Years in community					
Less than 5 years	14 (31.8)	30 (68.2)	1.89	2	.388
5-15 years	43 (33.3)	86 (66.7)			
More than 15 years	69 (35.6)	125 (64.4)			

Note. * $p < .05$. Source: Field survey (2026).

Table 6 Binary Logistic Regression: Predictors of Adequate Flood Preparedness (N = 367)

Variable	B	SE	Wal d	df	p	OR [95% CI]
Sex (male vs. female)	0.47	0.21	5.01	1	.025*	1.60 [1.06, 2.41]
Age (31-50 vs. 18-30)	0.29	0.23	1.59	1	.207	1.34 [0.85, 2.10]
Education (tertiary vs. none/primary)	0.88	0.20	19.36	1	<.001*	2.41 [1.63, 3.57]
Income \geq ₦100,000 (vs. < ₦70,000)	1.15	0.26	19.57	1	<.001*	3.16 [1.89, 5.29]
Years in community (> 15 vs. < 5)	0.34	0.22	2.38	1	.123	1.40 [0.91, 2.16]
Prior flood experience (yes vs. no)	0.52	0.24	4.67	1	.031*	1.68 [1.05, 2.70]
Constant	-2.14	0.41	23.61	1	<.001	--

Note. * $p < .05$. OR = odds ratio; CI = confidence interval; SE = standard error; B = unstandardised regression coefficient; df = degrees of freedom. Reference categories in parentheses. Hosmer-Lemeshow goodness-of-fit: chi-square = 7.23, df = 8, $p = .51$. Nagelkerke R² = 0.39. Source: Field survey (2026).

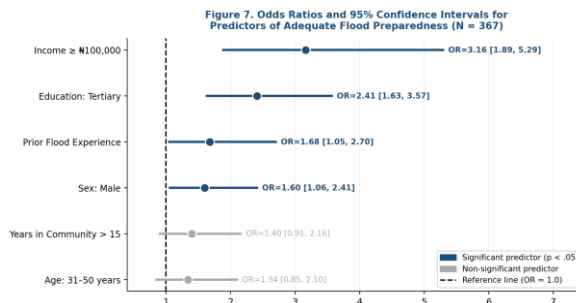


Figure 7. Odds Ratios and 95% Confidence Intervals for Predictors of Adequate Flood Preparedness (N = 367)

V. DISCUSSION

Overview of Key Findings

This study set out to assess readiness perception regarding the causes and impacts of flood disaster in Osun State, Nigeria. Regarding Research Question 1, we found that perceived causes of flooding are dominated by anthropogenic, infrastructure-related factors, particularly poor drainage, waste disposal, and unplanned urban development. Regarding Research Question 2, we found that flood readiness is critically inadequate among community residents despite very high rates of prior flood experience, and that flooding is perceived to cause severe socioeconomic and public health harm. Through the PMT lens, these findings reveal a pattern of high threat appraisal coexisting with profoundly weak coping appraisal, precisely the configuration that predicts maladaptive disaster response (Rogers, 1975; Yin et al., 2021).

Perceived Causes and Their Governance Implications

The dominance of anthropogenic causal attributions in this study, particularly the high endorsement of poor drainage (82.5%), waste disposal (76.3%), and unplanned development (68.9%), is consistent with the broader Nigerian flood literature. Echendu (2023) and Nkwunonwo et al. (2022) both identify drainage failure and informal settlement expansion as the foremost structural drivers of urban flooding in Nigeria, observations directly mirrored in the Osun State community perceptions documented here.

However, the relatively lower endorsement of climate change and intense rainfall (61.2%) compared with infrastructure-related causes is noteworthy. While

respondents were not uninformed about climate drivers, their framing of flooding as primarily a governance failure rather than a natural hazard is both empirically well-grounded and policy-significant. This framing reflects a rational appraisal of the immediate, proximate drivers of local flood events, yet it also signals a gap in community awareness of the long-term, climate-driven intensification of rainfall that will amplify flooding regardless of infrastructure investment (IPCC, 2021).

Targeted hazard communication campaigns must therefore address both dimensions, connecting the visible governance failures that communities already recognise to the less visible but increasingly influential climate drivers of future flood risk.

The Experience-Preparedness Paradox

The most striking finding of this study is the profound gap between flood experience (77.4%) and adequate preparedness (34.2%), a pattern that is neither unique to Osun State nor easily explained by awareness deficits alone. Through the PMT framework, this paradox is interpretable as a coping appraisal failure: respondents may perceive the flood threat as serious (threat appraisal is high) but judge themselves as incapable of effective protective action (self-efficacy is low) or doubt that available protective measures would be effective (response efficacy is low). This interpretation is consistent with findings from Ibadan, where negative outcome expectancy and misplaced trust in structural flood defences suppressed preparedness behaviour despite high flood awareness (Abubakar & Ishola, 2025).

SCT further enriches this interpretation by highlighting that self-efficacy, the belief in one's capacity to act, is itself conditioned by socioeconomic resources. Respondents on incomes below 70,000 Naira per month face material constraints that make even basic preparedness actions, such as storing emergency supplies or developing evacuation plans, economically prohibitive. The LGA-level data (Figure 4) further reveal that the experience-preparedness gap is widest in Osogbo and Iwo, the most urbanised LGAs, where population density amplifies flood exposure but does not automatically translate into greater individual preparedness capacity.

Socioeconomic and Public Health Impacts

The perceived impacts documented in this study are consistent with national and regional flood impact evidence, and they map directly onto the socioeconomic vulnerability profile of Osun State communities. The high endorsement of livelihood disruption (79.1%) and displacement (71.4%) reflects the documented consequences of the 2022 Nigeria floods, which the NBS (2023) assessment identified as generating large-scale household income collapse and forced relocation across southern Nigeria. The strong endorsement of waterborne disease outbreaks (65.8%) as a perceived health impact is consistent with the well-established public health consequences of stagnant floodwaters in communities with limited sanitation infrastructure (Obi et al., 2021; Salami et al., 2022). The gendered pattern revealed in Figure 6, wherein female respondents consistently reported higher severity endorsement across health impact indicators, corroborates national evidence that women bear disproportionate post-flood health burdens due to gender role concentration in domestic and caregiving responsibilities (Elum & Lawal, 2024). These findings collectively underscore the multidimensional nature of flood-induced vulnerability in Osun State and the inadequacy of single-sector response frameworks.

Sociodemographic Predictors of Preparedness

The finding that household income (OR = 3.16) and educational attainment (OR = 2.41) are the strongest independent predictors of adequate preparedness is theoretically coherent within both PMT and SCT frameworks. Higher income provides the material resources, such as emergency supply stockpiles, financial buffers, and housing adaptations, that translate preparedness intention into preparedness action. Higher educational attainment enhances access to flood information, capacity to comprehend and act on early warning messages, and familiarity with institutional DRR resources. Together, these findings reinforce the socioeconomic gradient of disaster resilience that is consistently documented in the global South (Cvetković et al., 2018; Kumaresen et al., 2025). The significant but smaller effect of prior flood experience (OR = 1.68) indicates that direct experiential learning does contribute to preparedness improvement, even among lower-income groups, suggesting that community-based

experiential interventions, such as flood drills anchored in the memory of past events, represent a modifiable preparedness pathway that does not require income as a prerequisite.

CONCLUSION

This study provides the first dedicated empirical assessment of flood readiness perception across flood-prone communities in Osun State, Nigeria. In response to Research Question 1, we found that perceived causes of flooding are dominated by anthropogenic, infrastructure-related factors, specifically poor drainage (82.5%), indiscriminate waste disposal (76.3%), and unplanned urban development (68.9%), with climate change underweighted relative to its projected future contribution. In response to Research Question 2, we found that flood readiness is critically inadequate, with only 34.2% of respondents reporting adequate preparedness despite 77.4% having directly experienced flooding; that floods are perceived to cause severe livelihood disruption, displacement, and waterborne disease outbreaks; and that educational attainment and household income are the strongest independent predictors of preparedness adequacy.

These findings converge to indicate that flood readiness in Osun State is constrained by overlapping governance failures and persistent socioeconomic inequalities.

Future research should integrate geo-spatial flood risk mapping with community readiness surveys to spatially calibrate intervention targeting Osun State's diverse LGA risk gradient. Longitudinal cohort studies tracking preparedness behaviour change over multiple flood seasons would illuminate the causal pathways between flood experience, institutional engagement, and adaptive action. Experimental evaluation of community-based early warning and flood literacy interventions, particularly those designed for low-income and low-education households would generate the rigorous evidence base needed to inform gender-responsive and equity-centred disaster risk governance in Osun State and analogous southwestern Nigerian contexts.

RECOMMENDATIONS

The following five recommendations are derived directly from the study findings and are mapped to specific results.

1. Osun State government should further prioritise emergency rehabilitation and systematic expansion of drainage infrastructure across the five flood-prone study LGAs. State and local government authorities should also enforce existing environmental sanitation bylaws to reduce solid waste blockage of drainage channels, complemented by community-led drainage clearing initiatives.
2. NEMA and the Osun State Emergency Management Agency (OSEMA) should design and implement targeted hazard communication campaigns that explicitly address climate change as a driver of intensifying flood events, using community leaders, FM radio stations, and vernacular-languages materials as primary dissemination channels.
3. Community-based flood preparedness programmes should be formalised across all five study LGAs, integrating household evacuation planning, emergency supply stockpiling, regular community flood drills, and registration of flood-vulnerable households with OSEMA, anchored within existing community social structures and leadership frameworks.
4. Flood literacy and preparedness interventions should be specifically targeted at low-income and low-educational-attainment household heads. Free community workshops, mobile public address systems, and vernacular-languages preparedness guides should be deployed to bridge the socioeconomic preparedness gap identified in this study.
5. Disaster risk reduction frameworks in Osun State must formally adopt gender-responsive approaches; ensuring women are included in flood preparedness planning committees, early warning information networks, and post-flood livelihood recovery programmes, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030 targets.

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