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ASSESSMENT OF RESIDENTS' PERCEPTION OF CAUSES AND EFFECTS OF FLOODING IN OSOGBO, OSUN STATE, NIGERIA

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ABSTRACT
A common environmental problem today in Nigeria is flooding which has had negative implications not only on the environment but also from the economic point of view. The study however examines the residents' perception of the causes and effects of flooding in Osogbo. The study relied on both primary and secondary data. Primary data were obtained through questionnaire administration on the residents of the study area. The purposive sampling method was used to select five flood-prone areas in the study area. They are Malam Tope, Rasco, Gbodofon, Fiwasaye and Oke Baale. A 90m buffer was set around the residential buildings earlier identified and was marked into three strata. Out of 2701 buildings identified in the affected areas, 270 representing 10% were selected for this study. A systematic sampling technique was used to determine the sample size in the administration of the questionnaires in all the strata. Relative Severity Index (RSI) on the severity of flood disasters was sought using a five-point Likert scale with 1-5 weighted averages. Secondary data were sourced from journals, the internet, and environment planning agencies; OSSEMA. Data collected were analyzed using descriptive methods; measures of central tendency, tables, etc. Four major causes of flood, heavy rainfall, building along water channels, lack of drainage, and indiscriminate dumping of refuse were identified for all strata. The relative severity index (RSI) of flooding in the three strata indicated that loss of possession and household items have the highest mean weighted value of (2.7813), (2.0607), and (1.1943) respectively. The study concluded that flooding has negative implications on the environment, economy, and social lives of the residents in the study area. The study recommends the incorporation of physical planning policies, and development control enforcement among others.
Keywords: Residents, Flooding, Disasters, Perception.

INTRODUCTION
Flooding has become a major hazard in Nigeria and it is one of the most common natural and human-induced hazards that is responsible for death and other fatalities across the globe (Ducey and Coovert, 2013). Floods are a result of excess water flowing on land that used to be dry (Djimesah, Okine, and Mireku, 2018). Flooding also occurs when water particularly from rainfall, accumulates across an impermeable surface and cannot rapidly dissipate or evaporate. It can also occur when dams flood low-lying areas (Kingsley and Christopher, 2013; Adebayo, 2014).

The occurrence of flooding is severe, particularly in urban areas where there is intensity in land use, haphazard development, and unprecedented urbanization among others. According to Adeyinka, 2008, most of these cities are also characterized by uncontrolled development, substandard and inadequate housing, poor infrastructural provision and development, poor planning process and administration, weak urban governance, and poor land structure.

In Nigeria, flooding has remained a prevalent environmental problem. Available studies have shown that there is a frequent occurrence of flooding (Ishaya, Ifatimehin, and Abaje, 2009, Kolawole, Olayemi, and Ajayi, 2011, Olajuyigbe, Rotowa and Durojaiye, 2012, Ejenna, Amangabara and Chikwendu, 2014, Oloyede *et al* 2018, Bamidele and Badiora, 2019). Their studies pointed to the fact that flooding has negative impacts on the survival of livelihood, social and economic activities. Basically, in recent decades, flooding has led to the loss of thousands of lives and properties.

Specifically, flooding has affected the lives, properties, and sustainability of the environment as noted in available studies. Notably, floods being a natural hazard have negative implications not only

on the environment but also from the economic point of view. For instance, flooding affects housing, roads, and other physical structure making such areas not to be attractive to residents.

Agbonkhese *et al* make a classification of the effects of flood based on human resources, natural resources, physical resources, monthly incomes, and monetary asset-based. Their studies showed that flooding has negative returns on investment and can lead to massive destruction. Oruonye, Ahmed, and Yakubu, 2017, examined the effect of flood disasters on rural livelihood and coping mechanisms in the Lau local government area of Taraba state in Nigeria. Their findings revealed that floods have negative impacts on the socio-economic status and livelihood of the people in the local government area.

The effect of flooding on the economy of nations is catastrophic. Financial losses due to the flood run into billions every year. The amount of money spent on emergencies every year can be diverted for the development of the vital sectors of the economy. The Government is confronted every year with the need to repair damaged infrastructure such as roads, bridges, buildings, hospitals, schools, and culverts. The various government makes provisions every year to resettle the displaced people. The Lagos state government in Nigeria relocated about 681 people to the resettlement camp at Agbowa at the expense of the government providing them with three square meals daily (LASEMA, 2020). Flooding in most cases is accompanied by the outbreak of diseases such as typhoid, cholera, dysentery, skin diseases, and other food and water-borne diseases. In the developing countries of the world, the majority of people do not have access to safe drinking and potable water. The people's sources of water are the rivers, streams, and lakes which are normally polluted whenever there is a flood disaster. The hopeless situation has usually exposed people to various diseases (Adebayo, 2014).

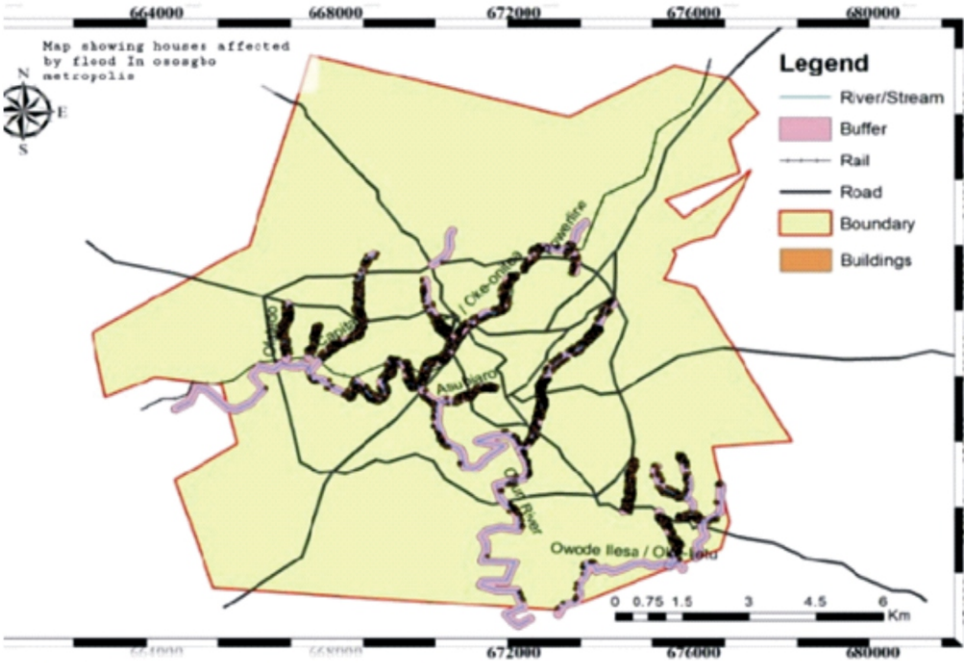
Oludare *et al* 2018, Olajuyigbe 2018, and Olabisi 2018, made a qualitative assessment of the cause and effect of floods in Nigeria but these works did not elaborate on how the people perceived the flood. Research on flood risk, vulnerability, cause, and effect should have a people center approach because of the need to address the issue of safety reality from flood risk. This paper however discusses the people's perceptions of the causes and effects of flood disasters in the study area.

Study Area

Osogbo is the capital of Osun state, it is located at latitudes $7^{0}42^{1}10^{11}$and $7^{0}51^{1}10^{11}$N, and longitude $4^{0}28^{1}43^{11}$ and $4^{0}40^{1}12^{11}$E. It has an area of approximately 2,875 km^{2}. It is some 88km by road from northeast of Ibadan. It is about 195km or approximately three-hour drive from Lagos. Osogbo shares boundaries with Ikirun, Ilesha, Ede, Egbedore, and Iragbiji and it is easily accessible from any part of the state because of its central nature.

The projected population for Osogbo in 2023 was put at 771,515 (World Population Review, 2023). Most of the population are members of the Yoruba ethnic group. Osogbo has a tropical climate with rainfall and an average annual temperature of 25.5^{0} Celsius (77.8^{0}Fahrenheit) and 1361 millimeters (55.6 inches) of precipitation. The height is about 500m above sea level (Falade, 2000) and it is drained by the Osun River and its tributaries such as Gbonmi, Ogbaagba, and Omu. Osogbo is located in the tropical hinterland of Nigeria.

The Osun Osogbo sacred groove, a forested area with shrines and sanctuaries, harboring Osun State and other deities was designated as a UNESCO World Heritage site in 2015. Osogbo is the trade centre for a farming region; yam, cassava, grain, and tobacco are grown. About 27% of the population is engaged in farming as their primary occupation, 8% are traders and 30% are clerks, teachers, etc.



of the study area of Osogbo Metropolis

THEORETICAL CONCEPT AND LITERATURE REVIEW

Model of disaster occurrence; The model to be considered is the disaster pressure and release model. The pressure and release model (PAR model) is a simple tool for showing how disaster occurs when natural hazards affect vulnerable people. Their vulnerability is rooted in social processes and underlying causes which may ultimately be quite remote from the disaster event itself. The basic PAR idea is that a disaster is the intersection of two opposing forces, those processes generating vulnerability on one side, and the natural hazard event (or sometimes a slowly unfolding natural process) on the other. The image resembles a nutcracker, with increasing pressure on people arising from either side, from their vulnerability and the impacts (and severity) of hazards for those people. The release idea is incorporated to conceptualize the reduction of disaster, to relieve the pressure, vulnerability has to be reduced (Wisner *et al*, 2003).

The PAR model might suggest (in its image of two separate sides in the diagram) that the hazard event is isolated and distinct from the condition which creates vulnerability. Hazard events themselves also change the set of resources available to households (e.g. floods) and alter the patterns of recoverability of different groups of people. Hazards sometimes intensify some people's vulnerability and the incorporation of the insight improves upon those interpretations that see disaster simply as the result of natural events detached from social systems. Conversely, economic and political circumstances, and the specific situations affecting particular livelihood opportunities, often force or encourage people to engage in practices that worsen the impact of hazards (Wisner *et al*,2003).

Types and Causes of Flooding

Various studies have been carried out by researchers on the types and causes of flooding globally (Agboola, Ajayi, Taiwo, and Wahab, 2012; Adejuwon and Aina 2014, Agbonkhese *et al* 2014, Adebayo 2014; Dabara *et al*,2014; Emeribeole, 2015), (Popoola, 2019) and Aina (2014).

Identified three types of flooding in Nigeria; Coastal flooding, River flooding, and Urban flooding. Coastal flooding occurs in the low-lying belt of mangrove and freshwater swamps along the coast. River flooding occurs in the flood plains of the larger rivers, while sudden, short-lived flash floods are associated with rivers in inland areas where sudden heavy rainfall can change them into destructive torrents within a short period. Urban flood on the other hand occurs in towns, on a flat or

low-lying terrain especially where little or no provision has been made for the surface drainage, or where existing drainage has been blocked with municipal waste and eroded soil sediments (Adeoye, Ayanlade, and Babatimehin, 2009). Similarly, the work of Adebayo (2014) identified six types of flood as follows;

(a) Upstream floods; These are floods that affect small localized areas. These are often caused by sudden, locally intense rainstorms, and by events like dam failure. Even if the total amount of water involved is moderate, the rapidity with which it enters the streams can cause it temporarily to exceed the stream channel capacity.

(b) Flash floods; These are a variety of upstream floods characterized by an especially rapid rise of stream stage. Flash floods will occur anywhere that surface runs off rapidly, is large in volume, and is fuelled into relatively restricted areas. It occurs in the urban city on the highways or roads as a temporary stream. It can also occur in a desert after a cloud burst but the water level quickly subsides as it sinks into parched ground. Flash floods occur primarily in hilly or mountainous areas due to prevailing connective rainfall mechanisms, thin soils, and high runoff velocities. The warning time for such an event is short. In general, the duration of this flood is also short but this flood type is also frequently connected with severe damage, mainly because it is narrow, fast flowing, and deep.

(c) Downstream flood; These are the floods that result from prolonged heavy rain over a broad area or extensive regional snow melt. It usually lasts longer than the upstream flood because of excess water.

(d) Coastal flooding; This is caused by higher sea levels than normal, largely as a result of storm surges. Coastal flooding may be caused by the combination of high tide levels, storm surges, and wave action.

(e) Fluvial flooding; This occurs in the flood plains of rivers when the capacity of the water course is exceeded as a result of high rainfall or snow and ice melts within catchment areas further up streams. Blockage of water courses and flood channels or tide locking may also lead to ponging and rising water levels.

(f) Pluvial Flooding: This is surface water flooding caused by rainwater run-off from urban and rural land with low absorbency. Increased intensity of development in the urban area has given rise to land with a larger proportion of non-permeable surface, a problem often exacerbated by overloaded and outdated drainage infrastructure. These circumstances combine with intense rainfall, can give rise to localized flooding.

On the other hand, the universal cause of floods according to Agbonkhese *et al* (2014) and Adebayo (2014), is heavy or excessively prolonged rainfall or even both. Floods can manifest along marine coasts from wind-driven storm surges and rain-swollen streams associated with tropical typhoons and hurricanes. Besides, flooding can also occur on the shorelines of the large inland lake (Agbonkhese *et al* 2014). According to Adebayo (2014), floods generally occurred during the period of heavy rainfall or snowfall. Water from rainfall or snow is distributed in many ways. Some of the water is retained by the soil, some are absorbed by vegetation and some evaporate. The water which remains and which reaches the stream channel is called runoff.

Flood occurs when soil and vegetation cannot absorb all the water. Whenever this happens, the water then runs off the land in quantities that cannot be carried in stream channels or retained in natural ponds and constructed reservoirs, periodic floods occur naturally on many rivers forming an area known as the flood plain. These river floods often result from heavy rain, sometimes combined with melting snow which causes the river to overflow its banks.

Climate change is also a major cause of flooding and it is an issue that is related to the economic, social, cultural, and physical environment of any nation. It is a vital environmental factor that shapes and re-shape various activities of human beings in society.

Other major causes of flood include; human interaction with the environment in the form of industrialization, technological development, urbanization, deforestation, burning fossils, and agricultural activities (Agbonkhese, 2014).

Flooding can also be caused by poorly constructed dams. The size of the dams is a function of the quantity of water to be retained and the usage.

Effects of flooding

Man and his environment are usually the victims of flood disasters. Flooding wherever it happens, as it annually, has adversely affected man more than any other natural disaster. For instance, the floods in southwestern Haiti in 2010, caused great devastation so the authorities stopped counting the dead, bodies were piled up in common graves 10 feet wide, 10 feet long, and 20 feet deep. The estimate shows more than 3000 deaths in Haiti, Asian countries like India, China, Japan, Philippines, Thailand, Korea, Indonesia, Srilanka, Pakistan, Afghanistan, and other eastern countries. CNN reported that the flood disaster across southeast Asia in 2011 led to the death of more than 139,580 people (Adebayo, 2014).

Apart from causing the loss of lives, flood disaster has the effect of destabilizing and displacing the people. People are naturally destabilized when their properties such as houses and crops are destroyed by flood.

Other effects of flood include; damages to roads, bridges, and culverts with the consequence of disrupting flee flow of traffic. The flood in Sokoto state washed away several kilometers of access roads and bridges. Flood has the negative impact of rendering people jobless. People engaged in the agricultural sector are usually jobless during the period of severe flooding. The loss of jobs in the agricultural sector will invariably lead to a shortage of food in society (Adebayo, 2014). For example, in Jigawa state of Nigeria, about 20000 hectares of farmland were destroyed by flood in December 2010. Farm produce such as rice, guinea corn, millet, beans, sesame, and maize were washed away by flood. In the Bakura Local Government area of Zamfara state, a flood submerged about 2000 hectares of farmland (The Nation, 29th Sept. 2010). People engaged in agriculture usually finds it difficult to practice their occupation as happened in Haiti in 2008 after the flood, there were terrible landslides, a vast quantity of earth was washed into the sea, huge numbers of trees were uprooted, many fields and gardens were washed away and countless numbers of livestock were drowned (Adebayo, 2014).

The effect of flooding on the economy of the nation is a catastrophe. Financial losses due to flooding run into billions every year. The amount of money spent on emergencies every year can be diverted for the development of the vital sector of the economy.

RESEARCH METHODS

The study utilized primary and secondary data sources. Primary data were obtained through pretested structured questionnaires administered to residents of flood-prone areas of the Osogbo metropolis and oral interviews conducted by the head of household in the area. Osogbo has over 10 flood-prone areas as reported by Popoola (2019).

A random sampling method was used to select five flood-prone areas out of the identified flood-prone areas. The selected areas are; Mallain Tope, Rasco, Gbodofon, Fiwasaye, and Oke Baale.

The stratified random sampling method was used to stratify the residential buildings in the selected areas into three based on the maximum proximity of 90m to the major river/stream in the area. Therefore, buildings located within a distance of 30m to the river/stream constituted the first stratum, those between 31-60m to the river constituted the second stratum while the third stratum was comprised of those within 61-90m to the river/stream.

The choice of stratification is informed by the approved setbacks for major rivers in the Osogbo metropolis which stipulates a minimum of 15m for streams and a maximum of 45m for rivers as setbacks for different categories of rivers (Osun State Government of Nigeria, 2005).

The total number of buildings in the selected flood-prone areas was identified through fieldwork. The total number of buildings in the selected flood-prone areas was 2701. Two hundred and seventy questionnaires which are 10% of the total number of buildings identified in the areas were administered. But two hundred and forty-seven (247) questionnaires representing 92% of the administered questionnaires were recovered from the respondents.

The systematic sampling method was employed to select a residential building from each stratum which was based on the principle that once the initial household of 1 in every 5 buildings is selected,

others subsequently follow in a sequential pattern. One resident usually the head of the household was chosen in a building for questionnaire administration.
The secondary source of data was obtained from Osun State Emergency Management Authority (OSEMA), journals, and the Internet. The data was analyzed using descriptive statistical methods. Relative severity index (RSI) on the severity of flood disasters was sought using a Likert scale, i.e. (1) very severe (2) severe (3) neutral (4) not severe (5) not at all severe.

RESULTS AND DISCUSSION

Rate of Flood Disaster Occurrence in the Study Area

The result from Table 1 revealed that flood disasters occurred more frequently in the first stratum than second and third strata. In the first stratum, 61% of the respondents indicated that flood disasters occurred frequently while 39% of the respondents indicated that flood disasters occur occasionally. In the second stratum, 50.6% of the respondents indicated that flood disasters occurred occasionally while the proportion of respondents who perceived flood disaster occurrence as frequent was 49.4%. Also in the third stratum, the proportion of respondents who considered flood disasters to be occasional was 61.3% while 38.7% of the respondents indicated that flood disasters occur frequently. This implies that residents who live within the first stratum experienced flood disaster frequently than residents of other strata as a result of their proximity to the river/stream.

Table 1; Rate of flood disaster occurrence

Distance to River (M)		**Rate of flood disaster occurrence**		**TOTAL**
		Occasionally	**Frequently**	
Less than 30	Count	16	25	41
	%	39.0%	61.0%	100%
31-60	Count	44	43	87
	%	50.6%	49.4%	100%
61-90	Count	73	46	119
	%	61.3%	38.7%	100%
TOTAL	**Count**	**133**	**114**	**247**
	%	**53.8%**	**46.2%**	**100.0%**

Source; Authors' fieldwork, 2023

Causes of Flood Disaster in the Study Area

Presented in Table 2 are the causes of flood disasters in the study area as perceived by the respondents. Four major causes of the flood were identified in the study area; these are heavy rainfall, building along water channels close to the rivers, lack of drainage, and indiscriminate refuse dumping. Finding across the three strata revealed that heavy rainfall was the major cause of flood disasters with a proportion of 40.8% of the respondents. Lack of drainage facilities was ranked second with (31.8%) of the respondents while 17.3% and 10.1% of the respondents opined that building along water channels and river banks and indiscriminate refused dumping respectively were the causes of flood disasters in the area in the first stratum. 35.8% of the respondent indicated heavy rainfall as the cause of flood disaster, 22.9% of the respondents indicated indiscriminate refuse dumping while 22% and 19.3% of the respondents indicated building along water channels and close to river banks and lack of drainage facilities respectively as the causes of flood disaster. In the second stratum heavy rainfall was ranked as the major cause of flood disaster (46.1%) this was closely followed by a lack of drainage facilities which constituted 40.6% of the respondents while 10.9% and 24% of the respondents indicated building along water channel and river bank and indiscriminate refuse to dump respectively as the cause of flood disaster. Similarly, in the third stratum, 39.3% of the respondents opined that heavy rainfall was the cause of the flood disaster, this was followed by a lack of drainage facilities (31.4%) and building along water channels and river banks (19.7%) while the least ranked cause of flood disaster in the stratum was indiscriminate refuse dumping which

constituted 9.6% of the respondents. It is however evident from the result that heavy rainfall and lack of drainage facilities were the major causes of flood disaster in the study area as perceived by the residents.

Table 2; Causes of Flood Disaster

Distance to River(M)		Causes of flood disaster				**TOTAL**
		Heavy Rainfall	Building Along water Channel and Close to river	Lack of Drainage facilities	Indiscriminate Refuse Dumping	
Less than 30	Count	39	24	21	25	109
	%	35.8%	22.0%	19.3	22.9%	100.0%
31-60	Count	76	18	67	4	165
	%	46.1%	10.9%	40.6%	2.4%	100.0%
61-90	Count	90	45	72	22	229
	%	39.3%	19.7%	31.4%	9.6%	100.0%
TOTAL	**Count**	**205**	**87**	**160**	**51**	**503**
	%	**40.8%**	**17.3%**	**31.8%**	**10.1%**	**100.0%**

Source; Authors' fieldwork, 2023
*Normal totals were exceeded due to multiple responses

Relative Severity Index (RSI) of Flood Disaster on (0-30m)

Table 3 indicated that loss of possession and household items has the highest mean weight volume of (2.7813). This implied that loss of possession and household items is very consistent among the impact of flooding in less than 30m stratum. This situation is followed by the damage to household properties which has a mean weight value of (2.5182), disruption of electricity having a mean weight value of (2.3441), a high incident of health problem which is having mean weight value of (2.3157) and negative impacts on business and other sources of livelihood having mean weight value of (2.1093).

Furthermore, the impact of flooding which is the least severe within less than 30m is the loss of life with a mean weighted value of (1.2642). This implies that the impact of flooding on the loss of lives is not severe.

This is closely followed in decreasing order by traffic congestion and disruption of traffic flow with a mean weighted value of (1.2753). Road accidents with a mean weighted value of (1.7635) damage, to and loss of infrastructure with a mean weighted value of (1.9287).

It could however be deduced from the above analysis that loss of possession and household items is the most severe impact of flooding in the study areas this could be due to the proximity to the rivers.

Table 3; Relative severity index (RSI) of flood disaster on (0-30meters)

SN		RANKING					NR	SWM	MWV	RANK
	IMPACT OF FLOOD	**5**	**4**	**3**	**2**	**1**				
1	Damage to and loss of infrastructure	0	72	60	280	87	247	622	1.9287	6
2	Damage to household properties	0	0	362	160	280	247	427	2.5182	2
3	Traffic congestion and disruption of the traffic flow	0	12	33	80	190	247	315	1.2753	8
4	Loss of possession and household items	150	192	159	140	46	247	687	2.7813	1
5	Road accident	0	0	87	360	38	247	485	1.7635	7
6	Loss of life	0	16	60	26	209	247	311	1.2642	9
7	High incidence of health problems	90	200	135	26	121	247	527	2.3157	4
8	Negative impact on business and others	60	112	159	112	78	247	521	2.1093	5
9	Disruption of electricity	100	152	186	28	113	247	579	2.3441	3
	TOTAL								**18.3003**	

Source; Authors' fieldwork, 2023

Mean of $\sum MWV/n = 18.3003 / 9 = 2.0333$

Relative Severity Index (RSI) of Flood Disaster on (31-60m).

It was observed from Table 4 that loss of possession of household items has the highest mean weight value of (2.0607), this implied that loss of possession of household is very consistent among the impact of flooding in the 31-60m stratum. This is followed by damage to household property which has a mean weight average of (1.6963), negative impact on business and other sources of livelihood which is having mean weight value of (1.5263), and disruption of electricity having a mean weight value of (1.4291).

Furthermore, the impact of flooding with the least severity between 31-60 meters stratum is the high incidence of health problems with a mean weight value of (1.1568). This implies that the impact of the flood on the high incidence of health problems is not severe or does not occur. However, it could still be deduced from the above analysis that loss of possession and household items is the most severe impact of flood in the study area.

Table 4; Relative severity index (RSI) of flood disaster on (31-60 meters)

SN		RANKING					NR	SWM	MWV	RANK
	IMPACT OF FLOOD	**5**	**4**	**3**	**2**	**1**				
1	Damage to and loss of infrastructure	0	0	15	324	80	247	419	1.6963	3rd
2	Damage to household properties	0	40	117	158	119	247	434	1.7470	2nd
3	Traffic congestion and disruption of the traffic flow	0	4	45	140	161	247	350	1.4170	7th
4	Loss of possession and household items	55	60	120	184	89	247	509	2.0607	1st
5	Road accident	15	20	30	72	193	247	330	1.3360	8th
6	Loss of life	5	12	54	113	169	247	352	1.4251	6th
7	High incidence of health problems	0	8	90	154	138	247	387	1.1568	9th
8	Negative impact on business and others	0	0	105	80	192	247	377	1.5263	4th
9	Disruption of Electricity	0	12	63	110	168	247	353	1.4291	5th
	Total								**13.7943**	

Source; Authors' fieldwork, 2023

$$\text{Mean of } \sum MWV/n = 13.7943 / 9 = 1.5327$$

Relative severity index (RSI) of flood disaster on (61-90m)

From Table 5, it was discovered that loss of possession and household items has the highest mean weight value of (1.1943). This implies that loss of possession and household items is very consistent among the impact of flooding between 61-90m stratum. This is however followed by damage to and loss of infrastructure which has a mean weight value of (1.8097). Whereas damage to household property was having mean weight value of (1.7004). Disruption of electricity which is also having a mean weight of (1.6437) and a negative impact on business and other sources of livelihood has a mean weight value of (1.0728). Furthermore, the impact of flooding with the least severity between 61-90m is road accidents with a mean weight value of (0.7935). This also implies that the impacts of flooding on road accident in this stratum is not severe or do not occur. This is closely followed in decreasing order by loss of life with a mean weight value of (1.0445). Traffic congestion and disruption of traffic flow with a mean average of (1.0249), high incidence of health problems with a mean weight value of (1.0485). It could however be deduced from the analysis that loss of possession and household items is the most severe among the impact of flood in the study area.

Table 5; Relative severity index (RSI) of flood disaster on (61-90m)

SN		RANKING					NR	SWM	MWV	RANK
	IMPACT OF FLOOD	**5**	**4**	**3**	**2**	**1**				
1	Damage to and loss of infrastructure	0	0	0	400	47	247	447	1.8097	2rd
2	Damage to household properties	0	0	141	158	121	247	427	1.7004	3nd
3	Traffic congestion and disruption of the traffic flow	0	0	0	12	241	247	253	1.0247	7th
4	Loss of possession and household items	0	0	3	92	200	247	295	1.1943	1st
5	Road accident	5	8	33	36	114	247	196	0.7935	9th
6	loss of life	0	0	3	22	233	247	258	1.0445	8th
7	High incidence of health problems	0	0	0	24	235	247	259	1.0485	6th
8	Negative impact on business and others	0	0	6	20	231	247	265	1.0728	5th
9	Disruption of electricity	15	16	36	222	177	247	406	1.6437	4th
	TOTAL								**11.3323**	

Source; Authors' fieldwork, 2023

Mean of $\sum$MWV n = 11.3323 9 = 1.2591

Discussion

Responses from Table 1 shows that the rate of flooding in the study area is occasional and the major causes of flooding that were identified in Table 2 in the study area include; heavy rainfall, building along water channel and close to river, lack of drainage facilities and indiscriminate refuse dumping for all the strata. The ranked RSI value shows the order of magnitude of the severity of flooding in the study area. Table 3 which represents (0-30m) has a 2.7813 mean weight value (MWV) as the highest order which is loss of possession, this is followed by 2.518, 2.317, and 2.1093 respectively.

Table 4 representing (31-60m) has the highest mean weight value (MWV) of 2.0607 representing a loss of possessions and 1.7470, 1.5263 respectively representing damage to household properties and negative impacts on business. Table 5 representing (61-90m) has the highest mean weight value of 1.1943 and others subsequently follow. It is however concluded that the loss of possession has the highest mean weight value (MWV) for all the strata.

CONCLUSION AND RECOMMENDATION

Based on the finding from the study, it was concluded that the causes of flood disasters in the study area were heavy rainfall, lack of drainage facilities, indiscriminate refuse dumping, and building along river channels. However, it was also observed that flooding has negative implications on the environment, economy, and social lives of the residents in the study area. As noted in the study, flooding affects physical development such as houses, roads, and structures. In case of a serious flood, lives can be lost in the process. With the observation that flooding is a serious environmental threat, it was suggested that appropriate measures be put on the ground to stem the level of its occurrence in the study area. Specifically, the government should ensure that environmental management policies are properly enforced in the study area.

Flood disaster risk reduction planning guidelines should be incorporated into physical planning policies to ensure that flood prevention and management are not an after taught in the planning process.

The Development Control Department should carry out effective supervision to prevent development in areas close to river bodies. This will reduce the incidence of flooding in the area. Waste management in the study area should be improved upon. A flood monitoring and warning system should be established and effectively manage to solve the problem of inadequate flood warnings to the residents in the area.

Public sensitization should be embarked upon by authorities to increase the level of awareness of residents about flooding, its causes and effects, and preventive and post-recovery measures.

Residence should participate in the identification of problems, initiation of solutions, and implementation of flood disaster risk reduction strategies.

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