RESIDENTS' PERCEPTION OF THE IMPACT OF FLOOD IN SHIMANKAR RIVER BASIN, SHENDAM LGA OF PLATEAU STATE.

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Abstract

A flood disaster is an unforeseen and sudden event that causes damage to physical infrastructure, destroys lives and properties as well as induces human suffering. This study aimed at assessing the impact of floods on the environment and the livelihood of people in Shimankar River Basin in Shendam Local government Area of Plateau State. To achieve this, relevant data were collected by field observations, interviews, and self-administered questionnaires. A total of 189 respondents were chosen from seven (7) communities residing close to the river channel by probability random sampling. Microsoft excel was employed in creating a database used for descriptive and inferential statistics. The result obtained showed that 73.5% of respondents were self-employed and a little above half of the population (50.8%) were aged between 40 and 59 years. The marital status of the respondents reveals that most were married, with an average monthly income of between ₦25,000 and ₦ 40,000. The finding also revealed evidences that yearly floods has occurred from 2006 to 2016; with 2012 flood year being the worst. The result also revealed that flood impact on livelihood was worst on agrarian-based livelihoods (crop, livestock and Fish farming) while its impact on infrastructures was across allsections except on communication masts. The findings further revealed that 10% of all building types collapsed due to floodings and 50% of the collapsed buildings were of the traditional housing types. Healthwise, Cholera/Diarrhea, Malaria, Typhoid and Bilharziasis with 28%, 17%, 13%, and 10% response, respectively, were at the fore of diseases associated with floods. The study hypothesised that there is no significant difference in the coping strategies adopted by the studied communities. The One Sample t-Test parametric statistics was adopted to test the hypothesis that there is no significant difference in coping strategies adopted by the communities in the river basin.These results confirm the assertion that there is significant difference in the coping strategies with all p-values being less than 0.05 Thus, the null hypothesis that there is not is rejected.

Keywords: Impact, Flood, Perception, River basin

INTRODUCTION

Flood impacts have long been recognized as complex and multifaceted. Floods are perhaps the most frequently occurring natural catastrophic event. Its increasing risk due to climate change in combination with an upsurge in population and urbanization of coastal and riverside cities has made the impact of flooding on people and economic assets even more dramatic in poor and developing countries around the globe (Musolino, Ahmadian, & Falconer, 2020; Olemefore and Obasi, 1999). Floods are environmental hazards largely caused by meteorological factors, but very often induced my man's improper utilization or abuse of the physical environment. They are usually associated with heavy losses to life and property, misery, hardship, diseases, depression and at times famine (Okorie 2010; Nott 2006).

Flooding is a common environmental problem the world over. It occurs when a body of water moves over and above an area of land that is not normally submerged. Anusha & Bharathi, (2020) defines 'flood' as the temporary covering of land by water that is not normally submerged by water. It is a natural consequence of streamflow in a continually changing environment. Sada (1998) views it as an unusually high rate of discharge, often leading to inundation of land adjacent to streams, and it is usually caused by intense or prolonged rainfall. It is also seen as a hydrological phenomenon that results in a sharp increase in water flow or a rising water level that exceeds the capacity of rivers,

lakes, and reservoirs to accept the water (Zhanga, Yuc, Yud, Sid, Fengd, & Caoa, 2018).

The Third World Water Forum: Poverty and Floods held in March 2003 indicated that in recent years, floods had become more frequent and of increasing severity resulting in loss of life, injury, homelessness, damage to infrastructure and environment as well as impacting on other critical sectors such as education and agriculture. Heavy rains experienced in Nigeria recently have resulted in recurrent flash floods and waterlogging in valleys and low-lying areas within the several river systems that traverse the country. Flooding in Nigeria is generally linked to poor urban planning and climate change; with impacts connected to significant economic losses (mainly through destruction of farmlands, social and developmental infrastructure) and economic disruption (notably in oil exploration in the Niger delta, traffic congestion in many cities, disruption in telecommunication and power supply) (Nkwunonwo, 2016, Ologunorisa 2006).

Floods have benefits but also have many detrimental impacts on land, plants, animals, and people in general. While many people view flooding as having a solely negative effect, positive things can also result in the aftermath of a flood. According to Zhanga et al (2018), floodings often have significant ecological benefits, such as the deposition of rich and fertile sediments in the land adjoining the river and replenishing groundwater. However, when floods cause economic losses or threaten human survival and social development, they are considered to be "disastrous". Chen, (2002), grouped the impacts of flooding into three viz - Immediate & long-term impacts, Tangible & Intangible impacts, and Positive & Negative impacts. These classifications are not entirely independent of each other rather they are inter-dependent or interwoven upon each other.

The immediate impacts of floods include loss of human life, damage to properties, destruction of crops, loss of livestock, and deterioration of health conditions owing to water-borne diseases (Ajayi, 2012). Others are the weakening of structures like houses and bridges leading to the displacement of people, disruption of business, and infrastructures. Damages to infrastructure also cause long-term impacts, such as disruptions to supplies of clean water, wastewater treatment, electricity, transport, communication, education, and health, and leave communities economically vulnerable (Bunn &Arthington, 2002). Medically, flood impacts directly on both physical and psychological health, with a strong interaction between the two. The physical health impacts of floods include shock and gastrointestinal illnesses (Holmes, 2008). Other health impacts could be immediate, mid-term, and long term, for example, the immediate health impacts of flooding include drowning, injuries, hypothermia, and animal bite; mid-term health impacts could be the evacuation of patients, loss of health workers, and loss of health infrastructures including essential drugs and supplies. Other medium-term impacts include complications of injuries, infected wounds, poisoning, poor mental health, communicable diseases, and starvation. While the long-term health impacts of flooding include chronic Respiratory diseases, disability, poor mental health, and poverty-related diseases as potential legacies (Baxter, 2001).

The immediate environmental impacts of flooding include the destruction of homes, disruption of roads, rail, and communication lines, and loss of crops and agricultural land. Damage to infrastructure causes long-term impacts such as disruption to supplies of clean water, wastewater treatment, electricity, transport, communication, education, and health. Floods disrupt communication links and infrastructures such as power, roads, and bridges thereby affecting the economy in the long term and delayed on-going development initiatives and political processes. Damage to public infrastructure affects a far greater proportion of the population than those whose homes or businesses are directly inundated by the flood. In particular, flood damage to roads, rail networks, and key transport hubs, such as shipping ports, can have significant impacts on regional and national economies. Mirza, Dixit, and Nishat (2003) reported that flood disasters have different impacts on individuals, households, and communities. People cope in different ways. Those who have the capacity after being hit by a disaster emerge faster while those without such capacity sink deeper into the spiral of impoverishment. Coping strategies include actions such as migration from floods affected

areas, flood forecasting, flood insurance of animals and crops, food stockpiling, providing emergency health services, and building flood shelters. These have, however, not been woven systematically into an approach to achieve security from flooding.

Historically, flooding in Nigeria dates back to the early 1950s with coastal and fluvial floods. According to Adebayo & Oruonye (2012), fluvial floods account for the majority of flood threats experienced in locations along the plains adjoining major rivers in the country, including rivers Niger, Benue, Hadeja, and their tributaries. States, mostly affected by fluvial floods are Adamawa, Kano, Niger, Jigawa, Kaduna, Cross River, and Kebbi. Perhaps the worst fluvial flood in Nigeria before the 2012 event was the Kano state flood disaster of 2006 which affected hundreds of thousands of lives with economic loss in millions of US dollars.

Over the years, Plateau state has had its fair share of flood flickers, but of great significance is the floods on different dates in the months of July, August, and September of 2012. These floods were attributed to heavy rainfalls that lasted several hours, causing massive inundations across nine (9) Local Government Areas namely: Jos North, Kanam, Kanke, Langtang South, Mikang, Pankshin, Qua'anpan, Shendam, and Wase. The ravaging floods washed away houses, farmlands, and livestock. It also caused the death of some persons with an unconfirmed record of those missing. Furthermore, infrastructures such as roads, culverts, bridges, and electric poles were submerged and destroyed. A general high magnitude of displacement of persons was recorded during this period across the affected local government areas (SEMA, 2012).

The River Shimankar which traverses through Shendam LGA of Plateau state is one of such rivers that overtopped its bank in the recent 2012 floods with attendant impacts. Alex, (2013) gave historical records of floodings in the River Shimankar catchment to dates back as early as 1930, the 1950s, 1970s, and 1990s. Dakul, Mwansat, Mafuyai, Baklit, Laka, & Turshak (2018) reported that flood hazards are the foremost environmental problems confronting farmers within the Shimankar River Basin over several centuries. These flood events have over the years impacted on riparian populace thereby causing various influences (both positive and negative) on the people, their livelihoods, and the environment. Therefore, is a need to investigate the impacts of floods in the river basin with a view to proposing possible solutions to curtailing the adverse effect on the people and the environment. The objectives pursued are to identify livelihood types in the basin, ascertain the impacts of floods and the coping mechanism in place in the basin.

MATERIALS AND METHODS

Study Area

The Shimankar river basin is in a generally low-laying severely flood-prone area. Owing to its geographical location, communities within this basin have a limited capacity to regulate hydrological events because they are rural farmers. Shimankar basin is located in the southern part of Plateau State, Nigeria. The basin has several tributaries rising from the extreme south-east of Jos Plateau to the south, the main Shimankar valley runs from chip in the North to the River Benue at Ibi passing through Shendam area. The basin covers parts of Pankshin, Mikang, Langtang south, Shendam, Qu'anpan Local Government Areas of Plateau State (See fig 1 and 2.)

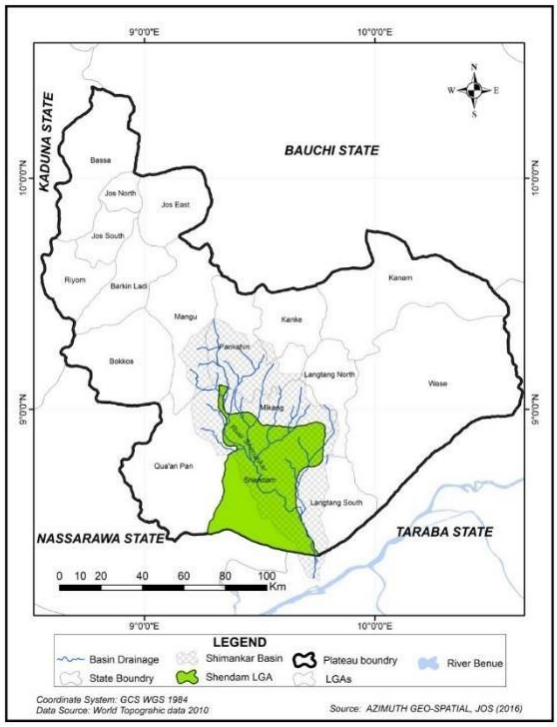

Figure 1 Shimankar Basin, Plateau State

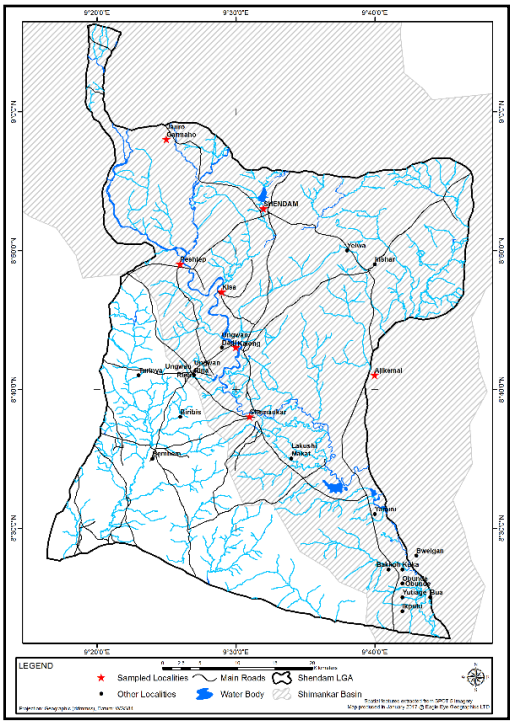

Figure 2 Sampled Communities in Shimankar River Basin, Shendam

Data Collection

To achieve the aim of the study, data was generated using the following; field observation, interview, self-administered questionnaire, and focus group discussion. Seven (7) communities close to the river channel (Jaurogarhamo, Peshiep, Kissakisa, Shendam, Kalong, Shimankar, and Ajikimai) were selected as the study settlements.

A total of 189 copies of a well-structured questionnaire was administered by the researcher with samples chosen by probability a random sampling method. Household heads were the main respondents unless otherwise since they are the main decision-makers in the family and flood impacts are on the entire family and community.

The focused group discussion and interview were guided by sets of question checklists of related impacts of flooding on livelihood, physical environment, housing, health facilities, sanitation as well as vulnerable groups and coping strategies. Microsoft excel was employed in creating the database used for descriptive statistics particularly frequency tables, percentages, and charts while the Chi-square statistical tool was employed to test the stated hypothesis. Satellite imagery of Shimankar River basin was obtained from the remote sensing office in Jos. Also, relevant information relating to flooding was obtained from, journals, textbooks, and the world wide web, as well as unpublished thesis and projects, to support literature.

Sampling Frame

According to Meekyaa (1999), the common rule acceptable to adopt a sample size in any social science research should consist of between 10 to 20 percent of the total population. To this end, a sample size of 15% was adopted for this work. Using the current google earth satellite image for the study communities a total of 1257 buildings were identified, these were assumed to represent a household, a 15% sample size (189 housing forms) was chosen as the sample size. The building count distribution and sample size according to villages are presented in table 1.

Table 1 Distribution of housing forms by communities and sample size

S/N	Settlement	Frequency	Sample size (15%)
1.	Jaurogarhamo	66	10
2.	Peshiep	109	17
3.	Kissakisa	79	12
4.	Shendam	420	63
5.	Kalong	143	21
6.	Shimankar	280	42
7.	Ajikimai	160	24
	Total	1257	189

Source: Field Survey, 2016.

A respondent was selected from each household and given a questionnaire to answer. The adoption of the simple random procedure could be used based on the fact that the population is homogeneous with identical members to represent the entire population regardless of the size of the population.

RESULTS AND DISCUSSION

The study sorts out to ascertain the perception of flood-prone residents in the Shemankar basin on the impacts of floods in the catchment. The impact of floods on the human community is related directly to the location and topography of the area, as well as human demographics and characteristics of the built environment. A hundred percent of the total 189 sample households determined for the study completed the survey. This high percentage response was due to the eagerness of respondents and the resourcefulness of the researcher that allowed for household representatives to respond to the questionnaire on behalf of the household heads where they are not readily available. The result and discussions are as followed:

Sociodemographic Characteristics of Respondents

Socio-demographic characteristics of the respondents including age, gender, and level of educational attainment are presented by descriptive statistics in Table 2. Flood impact depends to a large extent on these variables. The table reveals that no respondent was less than 20 years old, those above 60 years were 20% and between 20-60 years is cumulative of 80%. This distribution is indicative that the sampled respondents were predominantly heads who are relatively matured in age and therefore, a high possibility of very reliable informed responses. As regards marital status, above 60% of the respondents are married and about 10% are single. This distribution generally shows that there are more married respondents than single, divorced, or widowed and it agrees with the findings of Alex, (2013) that rural household head marital status are mainly married than single, divorced, or widowed. The gender distribution in Shimankar River basin shows that about 80% of respondents are males. This is probably indicative of the fact that in most Nigerian cultures, the men are the primary breadwinners of their households and the decision-makers and agree with the findings of Oluwatayo (2009).

The educational status of respondents will to a great extent determine the perception, vulnerability, and coping strategies that may be adopted by respondents in the catchment. The study found that about half (56.1%) of respondents had obtained secondary education, 22.8% had primary education, 14.3% had no formal education. This distribution reveals that a sizeable number of all the respondents are relatively educated to secondary levels and this could influence their coping and adaptation strategies. Considering the total households occupational types, the results show that households who are self-employed have over 70% of all respondents (with farming having above 60% of the self-employed total); this is expected in a rural setting with primary livelihood type being agrarian and agrees with Babatunde (2008) who states that self-employed is the most remunerative and productive family labor type.

Finally, results on the income distribution of respondents show that 33.3% of the respondents earn an average monthly income of between N25,000 and N 40,000, 23% earn an average monthly income that is less than N18,000, 18.0% have an average monthly income of between N18,000 and N25,000. However, less than 12% of the respondents earn above N60,000. The income distribution will affect the extent to which respondents' resilience and coping strategy to overcome flood impacts will be harnessed.

Table 2 Demographic characteristics of respondents

Demographics	Frequency	Percentage (%)
Age of Respondent (years)		
Less than 20	00	00.00
21 – 45	86	45.00
46 – 60	66	35.00
Above 60	38	20.00
Total	***189***	***100.00***
Marital Status		
Married	120	63.49
Single	20	10.58
Divorced	23	12.17
Widowed	26	13.75
Total	***189***	***100.00***
Gender		
Male	152	80.42
Female	37	19.58
Total	189	100.00
Level of Education		
Non–formal	27	14.30
Primary	43	22.80
Secondary	106	56.10
Tertiary	13	6.80
Total	***189***	***100.00***
Occupation		
Students	14	7.4
Civil Servant	36	19.1
Self Employed	139	73.5
Total	189	100
Self Employed Types		
Farming	61	44
Trading	34	24
Beer Brewing	27	19
Fishing	17	12
Total	139	100
Monthly Income (₦)		
<18,000	45	23.8
18,000-25,000	34	18.0
26,000-40,000	63	33.3
41,000-60,000	25	13.3
>60,000	22	11.6
Total	***189***	***100***

Flood Occurrence: 2006 - 2016

Question asked on flood years in the past 10 years, revealed that each year from 2006 to 2016 had a response count of flood occurrence (Figure 3), however the record for the year 2012 was the highest recording of about 21% of the total response. This is indicative that respondents experienced floodings in the catchment every year in the past 10 years in at least one location or the other in the catchment; nonetheless, the 2012 event may be adjudged as the most spread and most impactful.

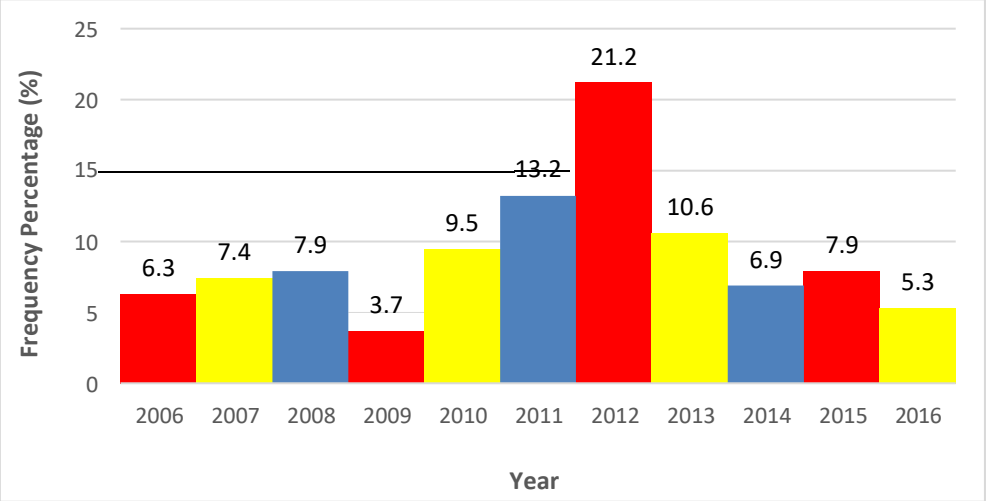

Figure 3 Frequency of Flood Occurrence in Shimankar River Basin (2006 – 2016)
Source: Field Survey, 2016

Causes of Flood in River Shimankar Basin

The causes of floods can be broadly divided into physical, such as climatological forces, and human influences (Nott, 2006). In the Shimankar basin, respondents perception of the cause of floods in table 3 revealed that the highest percentage response of 68.3 % was attributed to heavy rainfalls, about 23% thought it was due to anthropogenic activities (building and dumping of wastes in waterways), while 8% felt it was due to dam collapse. Heavy rainfalls are physical factors (which are climatic) while anthropogenic factors (which are specifically building on water channels and dumping of refuse in waterways) have worked in combination to cause floods in the study area. It could be argued that despite the high awareness of respondents on the causes of floodings in the basin, their socioeconomic disposition which is mainly tied to traditional land-based livelihoods strategies has largely contributed to their vulnerability to the menace of floods. Hence one can conclude that the occurrence of flooding in the basin is primarily climate-induced due to heavy rainfalls and anthropogenic due to human activities on waterways.

Table 3 Respondents view on cause of flooding

S/N	Cause of Flood	No of Respondents	Percentage (%)
1	Building close to the water channel	20	10.58
2	Blocking water channel with refuse	25	13.23
3	Dam Collapse	15	7.94
4	A high amount of received rainfall	129	68.25
	Total	189	100

Source: Field Survey, 2016.

Impacts of Flooding on Livelihood

Flooding affects various aspects of our lives. It affects our agriculture systems, trade, transport, and education amongst others. The impacts of flooding on livelihood were investigated and the results obtained are presented in table 4.

Table 4 Impacts of flooding on livelihood

S/N	Livelihood	No. of Respondents	Percentage (%)
1	Crop Farming	35	19
2	Livestock Farming	26	14
3	Beer Production	19	10
4	Fishing	17	9
5	Trading	15	8
6	Civil Servants	10	5
7	Students	8	4
8	No Impacts	59	31
	Total	189	100

Source: Field Survey, 2016

Findings from the study show that cumulatively about 69% of respondents across the study communities reported that floods affect their livelihood types, while only 31% reported otherwise. Livelihoods impacted include Crop Farming, Livestock Farming, Beer Production, Fishing, Trading, Civil Servants, and Students. Remarks made on types of impacts include flooding of farmlands, washing away of farm produce and stocks (animals and fish), flooding market spaces, and hindering students and civil servants from commuting to their respective points. All these affect productivity and lead to colossal losses of investment and properties. This finding agrees with Dakul et al (2018), who reported that the problem confronting farmers in the river basin is flooding.

Impact of Flooding on Infrastructures

Flooding impacts on physical infrastructures/facilities like roads, schools, hospitals, communication mast, and water supply system in the sampled communities are as shown in figure 4. About 58% of respondents indicated that their culverts, bridges, drainages, and feeder roads were washed away, on the contrary, 41% said these infrastructures were submerged by floods.

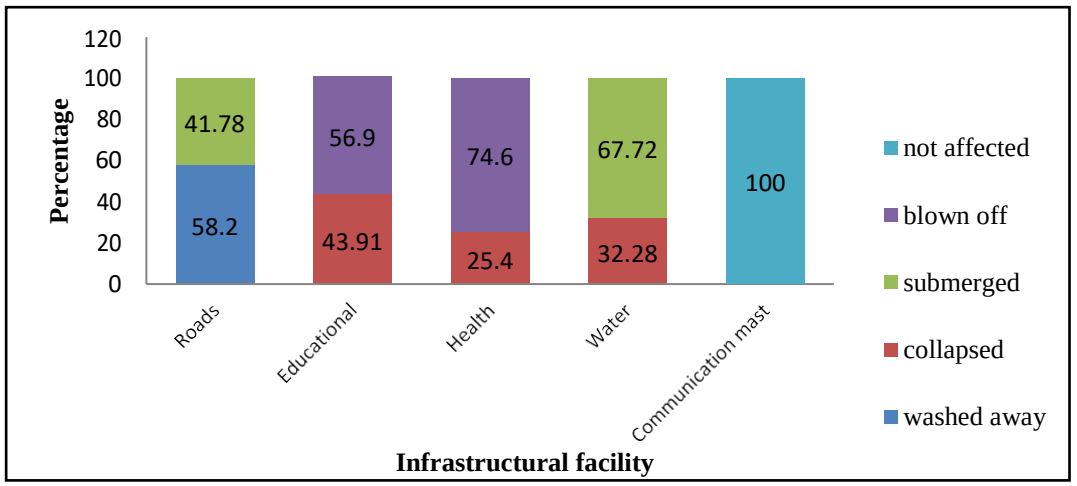

Figure 4 Effect on Infrastructural Facilities
Source: Field Survey, 2016

The implication of this is that evacuation of farm products distribution of finished goods and passenger flow which all have enormous socioeconomic implications

will be drastically reduces because most of the rural roads that connect the settlements are either washed away or submerged, this agrees with Abubakar, Umar, Barde, and Adamu (2020).

Other infrastructures flooded show that about 74% of the respondents indicated that their health facilities had their rooftops blown-off while 25% had the health building collapsed, 67% said their local wells and other sources of water were submerged by floods while about 33% of the respondents indicated that there different sources of water collapsed due to the excessive floods. The study further indicated that only communication masts that were in the area did not experience any severe effects of the flood.

Impacts of Flooding on Housing

Question asked on the housing types found in the study area revealed that among the 189 sampled households in the basin, about 60% live in traditional housing type, 25% live in modern housing type while 15% live in houses that have mixed attributes of both traditional and modern (Table 5)

Table 5 Housing types distribution type of respondents in shimankar river basin

S/N	Housing Type	Frequency	Percentage (%)
1	Traditional/Modern	30	15.87
2	Modern	46	24.34
3	Traditional	113	59.79
	Total	**189**	**100**

Source: Field Survey, 2016

This finding shows that settlements in the Shimankar River Basin are still very much rural with a large percentage of mud houses and thatched roofs and would be easily affected by floods. Further analysis on the nature of flood on these buildings (table 6) revealed that 9.5% of the respondents indicated that their houses or part of their buildings had collapsed, 41% responded that their buildings got soaked, 17% said they buildings were stained but 32% said their walls pealed off. Of the total buildings which collapsed, 50% were of the traditional types.

Table 6 Cross tabulation between nature of flood impact and housing type

Housing type	Traditional	Modern	Mixed	Total	%
Collapsed	9	3	6	18	10
Soaked	46	22	10	78	41
Stained	8	20	5	33	17
Walls Peeled off	38	13	9	60	32
Total	101	58	30	189	100
%	53	31	16	100	

Source: Field Survey, 2016

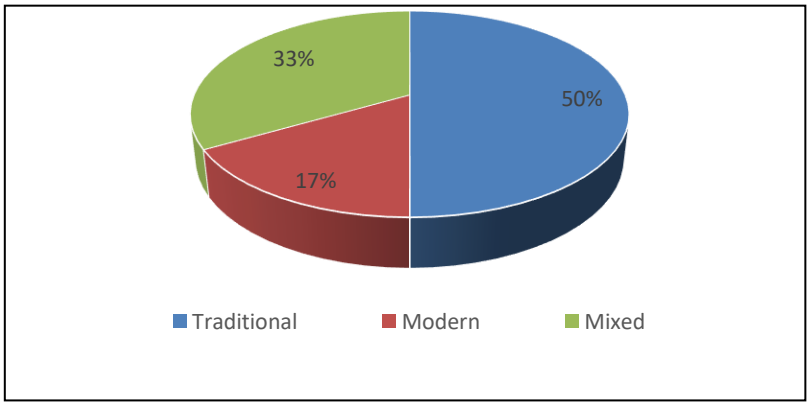

Figure 5 Distribution of Collapsed Building Type

Flooding and Diseases

Respondents were asked to identify at least two common diseases they experienced as a result of flooding in the catchment. The result obtained is summarized in table 7. The study reveals that Cholera/Diarrhea, Malaria Fever, Typhoid fever and Bilharzia with 28%, 17%, 13%, and 10% response respectively. The least is Schistosomiasis and Rheumatism with 3% each.

Table 7 Distribution of respondents by flood related diseases

SN	Disease	Frequency	Percentage (%)
1	Bilharzia	38	10
2	Cholera/Diarrhea	107	28
3	Cough	21	6
4	Dermatological problems	13	3
5	High Blood Pressure	29	8
6	Malaria Fever	65	17
7	Measles	30	8
8	Rheumatism	13	3
9	Schistosomiasis	13	3
10	Typhoid fever	50	13
	Total	379	100

Source: Field Survey, 2016

This agrees with Du, FitzGerald, Clark & Hou (2010), who alluded to the fact that indirect consequences of floods are those associated with the damage done to the water in the natural and built environment to include infectious diseases. This is also supported by Olanrewaju, Chitakira, Olanrewaju, & Louw, (2019) that the most common waterborne pathogen isolated after floodings causes cholera and watery diarrhea.

Flood Coping Strategies

A survey of the major coping strategies put in place by respondents in the study settlements was conducted and the findings are summarized in table 8. This revealed that about 33% of respondents got assistance from family and friends, 23% collect loans from cooperatives/banks, while 19% relied on government intervention. About 6% said they had no coping strategies but just to rely on God. This is in tandem with Olanrewaju C, Chitakira, Olanrewaju O, & Louw, (2019) who acknowledged that help from Government and NGOs are meant to be readily available immediately after a flood disaster, but they are often left unattended for a long period.

Testing Hypothesis

It was viewed that communities would exhibit different coping strategies to mitigate against flood effects and so it was hypothesized that there is no significant difference in coping

strategies adopted by the communities in the river basin.

The One Sample t-Test parametric statistics was applied on data in Table 8 and results presented in Table 9. Getting assistance from family and friends produced the highest mean and standard deviation values of 8.86 and 8.153 respectively. The lowest mean and standard deviation values were recorded on the coping strategy that it was in God's hands, thus there was no need for any strategy.

Table 8 Flood coping strategies at Shimankar catchment area

Community	GAFF	%	USB	%	CL	%	CCD	%	NS	%	GI	%	Total	Total %
Shendam	23	35	13	20	9	14	4	6	1	2	14	21	66	100
Shimankar	18	43	10	24	5	12	2	5	2	5	5	12	42	100
Ajikimai	6	32	7	37	2	11	2	11	2	11	0	0	19	100
Kalong	5	23	4	18	4	18	1	5	1	5	7	32	22	100
Peshiep	4	21	4	21	2	11	2	11	3	16	5	26	19	100
Kissakisa	3	30	3	30	2	20	0	0	0	0	2	20	10	100
Jaurogarhamo	3	27	2	18	2	18	1	9	2	18	2	18	11	100
Basin Total	62	33	43	23	26	14	12	6	11	6	35	19	189	100

GAFF: Getting assistance from family and friends; USB: Use of sandbags; CL: Collect loans; CCD: Construction and cleaning of drainages; NS: No strategy; GI: Govt or NGO intervention
Source: Field Survey, 2016.

Furthermore, the test for differences showed that there was a significant difference in the coping strategies adopted by all the communities in the river basin (GAFF, $P = 0.028 < 0.05$; USB, $P = 0.007 < 0.05$; CL. $P = 0.010 < 0.05$; CCD, $P = 0.011 < 0.05$; NS, $P = 0.005 < 0.05$; and GI. $P = 0.029 < 0.05$). These results confirm the assertion that there is significant difference in the coping strategies in all the communities in the river basin. Thus, the null hypothesis that there is not is rejected.

Table 9 One sample t test statistic result

Strategy	N	Mean	Std. Deviation	Std. Error Mean
GAFF	7	8.86	8.153	3.082
USB	7	6.14	4.059	1.534
CL	7	3.71	2.628	.993
CCD	7	1.71	1.254	.474
NS	7	1.57	.976	.369
GI	7	5.00	4.619	1.746

	Test Value = 0					
Strategy	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
GAFF	2.874	6	.028	8.857	1.32	16.40
USB	4.004	6	.007	6.143	2.39	9.90
CL	3.740	6	.010	3.714	1.28	6.14
CCD	3.618	6	.011	1.714	.55	2.87
NS	4.260	6	.005	1.571	.67	2.47
GI	2.864	6	.029	5.000	.73	9.27

CONCLUSION

The study revealed that the settlements studied are predominantly rural and experience persistent floods. The Floods have led to an alteration in livelihood patterns and sources, destruction of infrastructures to include houses, roads, schools, and hospitals, thus affecting the general well-being of the people. A wide range of diseases are being experienced in the area with Diarrhea and Malaria Fever being at the fore, others are Bilharzia, Cholera, Cough, and typhoid fever which are exacerbated from stagnant and polluted aftermath of the floods for drinking water. The nature of housing types in the study puts traditional housing types as predominant and mostly affected by floods. The damage is linked directly to the inundation depth and vulnerability of the building represented the quality of materials the building is made from. All these have in the long run destroyed infrastructures, livelihoods, and increased the poverty levels experienced within the study area. The research also revealed that households cope differently when affected by floods. The current coping strategies being employed by most households are not very effective because they had been using them and yet the situation did not improve.

Sequel to the above findings, some policy considerations for the management of floods' include:

(1) Government and key stakeholders should engage communities to move permanently to higher grounds with the provision of all the necessary social-amenities, and agriculture support for not less than three (3) years.

(2) Structural controls to include channelization and earth dams should be considered.

(3) In the long term, community-based floods early warning systems implemented.

(4) There is a need for a massive campaign against dumping of refuse in the drainage system.

(5) Flood policies should be enacted and implemented at community levels.

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