Flood Disaster and the Vulnerability of Households to Crime in Urban Areas in Nigeria

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Abstract

This study explores whether natural disasters, especially flooding, would lead to a rise in violent and property crime rates, and the implications that these crimes could have on the victims. A total of 100 victims of flood induced crime in flood prone areas were selected using purposive sampling technique. The data collected using questionnaire, and records from security agency comprised of socio-economic characteristics of affected households, violent and property crime rate rise, and implications of flood induced crime as perceived by affected communities. Also reported cases of crime in affected areas were collected from Police divisional headquarters and State Police Command of flood affected areas. Data collected were analysed using percentages, frequency count. Likert scale method was used to measure increase in crime during the flood incidence in the affected areas. Using a 'before, during and after' approach, the study revealed that flood disaster increased the vulnerability level of households to crime and at the same time crime increased during flood disaster and decreased significantly after the disaster in urban areas in Nigeria. Also, the implication of flood induced crime include anxiety and depression (ADI=2.73), Social dysfunction (SDI=2.36) and loss of confidence (LCI=2.72). Therefore, there is need for disaster prone areas and disaster management agents in the country to incorporate security measures in disaster preparedness, coping and recovery strategies in order to minimize security challenges ensuing from natural disaster in the country during flooding.

Keywords: Crime rates, Flood disaster, Households, Urban areas, Vulnerability.

Introduction

Urban areas around the world have experienced devastating events of climate change extremes such as floods, windstorms, bush fires and earthquakes as well as man-crafted disasters such as terrorisms and increased crime rates. Urban vulnerability to climate change is expected to increase in the years to come as both urban growth in disaster prone areas and climate change are not declining. According to the Intergovernmental Panel on Climate Change (IPCC, 2012), climate change is expected to increase the incidence of extreme weather events through the altering of average climatic conditions, inducing greater climatic variability and increasing extreme weather events like floods, among others. Flooding is becoming a serious threat to the economic and social structures of our society. It is one among the top ten natural disasters in the world in terms of people affected and property damage caused (Miller, 2005). It regularly claims over 20,000 lives and adversely affects around 75 million people annually, worldwide.

Infrastructure in cities of affected urban areas is always under a serious threat to flood disaster. Urban areas are social hubs, and life in cities is reliant on a number of social services and functions such as energy, health services and water provision, transport links and services, shelter/housing, education, security structures and employment for the proper functioning of these centres (Hammond, Chen, Djordjevic, Butler, and Mark, 2016). Flood disaster impacts can cause significant disruption to services ensuing from available infrastructure in urban areas and wider impacts on the population within the cities.

In addition, flood disaster does not only cause human, economic activities, and property loss, but also disrupt social order within and around affected urban areas. According to Zahran, Shelley and Peek (2009), flood disaster and other natural disasters weaken agencies of formal and informal social order, giving rise to criminal opportunities and behaviours. The availability of suitable targets (i.e property to steal or individuals to victimize), the absence of guidance (police, neighbours, or surveillance), and the presence of motivated offenders are basic situations that permit crime to occur. Studies have established increase in 'during and post disaster' violent and property crimes (Siman, 1977 and Roy, 2010). It is observed that there is always slight increase in violent and property crime in disaster affected areas, especially areas used as shelter for displaced persons (camps). Crime is described as hazards because of its uncertain probability for most households, communities and organisations that suffer from shocks or stresses of floods, wars, and terrorism which not only overwhelms their capacity to cope but also respond and recover (Kwanga, Shabu and Adaaku, 2017).

Hence, the risk of an individual, community and business during floods and its relationship to crime is a function of hazard (in terms of probability and intensity), vulnerability (susceptibility of buildings and content damage), and exposure (value of assets that can be damaged by natural disaster) as well as capacities (skills, technologies and resources) forming the sides of risk triangle (Chricton's 1999) used and unused to reduce vulnerability and increase security. In overcrowded conditions these issues generate competition and conflicts between neighbourhoods leading to insecurity of residents and social disorder. Taylor and Schumarker (1990) assent that victimization experiences of residents is a function of decay of social and physical conditions such as wide spread illegal activities in public dilapidated defaced buildings, amongst other requirements. Accordingly, Wamsler and Brink, (2014), Wahab (2013), inferred that, cities are hotspots for natural disasters, especially flooding which often times weaken the crime control measures put in place by relevant authorities. Crime is attracted to cities with weak policies and strategies to prevent, reduce or control crime.

Vulnerability is the degree to which a system or unit is likely to experience harm due to exposure to perturbations or stresses (Wisner, Blaikie, Cannon and Davis 2003). The concept of vulnerability originated in research communities examining risks and hazards, climate impacts and resilience. The vulnerability concept emerged from the recognition by these research communities that a focus on perturbations alone (environmental, socioeconomic, technological) was insufficient for understanding the responses of, and impacts on, systems (social groups, ecosystems, places) exposed to such perturbations. With the concept of vulnerability, it became clear that the ability of a system to calm stresses or cope with the consequences through various strategies or mechanisms constituted a

key determinant of system response and, ultimately, of system impact.

However, perceived household vulnerability and criminal behaviour is based on the proposition that natural disasters weaken agencies of formal and informal social order giving rise to criminal opportunities and behaviour (Zaharan, Shelly, Peek and Brody,2009). This is drawn from two ecological theories of crime, the routine activities by Cohen and Felson (1979) and disorganization theory by Shaw and MacKay, (1942) in Zaharan, Shelly, Peek and Brody, (2009).The routine activities theory posits that crime will occur if three key elements converge in time and space: the availability of suitable targets (property to steal and individuals to victimize), absence of capable guardians (police, neighbours or technologies of surveillance), and the presence of motivated offenders. These three identified elements often converge in time and space during and after flood disasters in urban areas. A disaster changes local routine behaviour and increases the likelihood that motivates offenders in identified suitable targets in the presence or absence of guardianship. For instance, vacated residential and commercial properties represent suitable targets. It seems levels of guardianship decrease as people evacuate their homes and law enforcement officials focus on rescue and emergency response activities. In some cases survivors may become targets of criminal victimization during recovery, evacuation and relocation schemes. Whereas, the social disorganization theory posits that communities characterized by residential instability, low economic status and poor social networks have impaired capacity to informally control crime. Thus natural disasters aggravate social conditions that cause social disorganization and crime. Natural disasters can destabilize community cohesion, impairing activities to respond to and sanction antisocial conduct or crime.

Accordingly, the effect of vulnerability and crime incidences in any society according to Fabusa (2007) needs comprehensive assessment to understand household vulnerability associated with violent and property crime which inter-play between space and society through risk analysis of offence, offenders and effects of the crime. Furthermore, flood disasters expose large numbers of people to a range of strains and negative emotions conducive to crime such as

anger, frustration, and fear creating pressure. These strains may reduce social control, foster belief favourable to crime and lead to criminogenic traits.

The effects of crime on victims (both individuals and corporate entities) are multiple. In contrast to the effects of accidental injury or disease, research on the effects of crime has stressed mental, psychological and social effects, compared to physical or financial effects (Lurigio and Resik, 1990; Norris and Kaniasty, 1994; Harries, 2000 and Santana, Santos & Costa, 2009). Indeed, some have suggested that being the victim of crime is qualitatively different from being the victim of an accident or disease, because it includes someone deliberately or recklessly harming you. These effects on livelihoods, health, and economics have clear implications on social order and crime (Agnew, 2011). Crimes committed after a hazard are considered expensive and costly. These crimes include individual acts of violence, thefts and burglary, others include corporate crime such as outcrop of certain vices against women and children (Glasson and Cozens, 2011).

The effects of flood induced crime according to Santana, Santos, Costa, Rogue, (2009) brings direct material costs, including not only the financial costs suffered by the victims but also expenses relating to the judicial system. In addition to financial costs, crime also has profound emotional and psychological effects upon the victims, causing behavioural alterations that may bring serious consequences for the whole community (Harries, 2000). These include fear of crime (anxiety and insecurity), the outcome of which may actually be worse than that of the criminal act itself (Carter & Jones, 1989) as it causes people to drastically alter their daily routines. Santana, *et al* (2008) examined the relationship between feelings of insecurity and community mental health, and found that this perception has a significant negative influence on the self-assessed health status of the population, affecting their general wellbeing. This paper examines the impact of natural disaster on crime rate and the feeling of insecurity and psychological implications in flood prone areas of urban areas in Nigeria.

Materials and Method

The study assessed the link between flood disasters and the incidence of crime events, as

well as their implications in the areas affected by such disasters in Nigeria. Inhabitants of the urban areas that were affected by the 2012 flood disaster were selected as the study population. The subjects for this study were victims of violent and property crime. Crime victims included individuals who encountered the crime event, or individuals within the immediate families that were affected by those crimes induced by flood disaster. The study identified households that were affected by either violent or property crime during flooding. The 2012 flooding was selected because it is the worst of all flood cases in recent times. According to the Nigerian Post-Disaster Needs Assessment (PDNA) report (2013), it surpassed all flood disasters that occurred in the past, in loss of lives and properties.

The data used in this study were collected from victims of flood induced crime in affected urban areas. These urban areas include: Port Harcourt, Calabar, Lagos, Yenegoa, Lokoja, Kaduna, Ibi, Wukari, Jalingo, Makurdi. The study selected four cities purpose which include Lagos, Lokoja, Makurdi and Yola. A total of 100 respondents were selected using purposive sampling technique. The data collected using questionnaire comprises of socio-demographic characteristics of flood induced crime victims, vulnerability to crime and rate of crime during flooding, and wellbeing during/after floods. Data collected were analysed using percentages, frequency count. Respondents' perception was analysed using Anxiety and Depression Index (ADI), Social Dysfunction Index (SDI), Loss of Confidence Index (LCI). The ADI, SDI and LCI indices were adopted with modification from Afon, Abolande and Okanlanwon, 2006 and Olatokun and Nwonne (2012). The formula is stated thus:

$$ADI = \frac{TWV_{i-j}}{N_{i-j}} \qquad (1)$$

Where ADI = Anxiety and Depression Index
TWV =total weight value of perceived Anxiety and depression
N =Respondents

$$SDI = \frac{TWV_{i-j}}{N_{i-j}} \qquad (2)$$

Where SDI =Social Dysfunction Index
TWV =total weight value of perceived social dysfunction index
N =Respondents

$$LCI = \frac{TWV_{i-j}}{N_{i-j}} \qquad (3)$$

Where LCI = Loss of Confidence Index
TWV =total weight value of perceived loss of confidence index
N =Respondents

**Perception rating scale**
4 –often (3.50-4.00)
3 – sometimes (2.50-3.49)
2 – not often (1.50-2.49)
1 – never (0.00-1.49)

Study area
        The 2012 Nigeria floods began in early July 2012, and killed 363 people and displaced over 2.1 million people as of 5 November 2012. Nigeria had received continued rainfall, which started in July and continued into September. The rains left approximately 80% of the country flooded. Nigeria's two major rivers – Niger River and Benue River – overflowed into the surrounding communities. States that were affected were mostly those contiguous to River Niger and Benue which are Kebbi, Niger, Kwara, Kogi, Edo, Anambra, Rivers, Delta, Bayelsa, Adamawa, Taraba, Benue and Nasarawa (See Figure 1). The specific area of study is the affected urban areas of these states where this flooding event was experienced. According to the National Emergency Management Agency (NEMA), 30 of Nigeria's 36 states were affected by the floods. The floods were termed as the worst in 40 years, and affected an estimated total of seven million people. The estimated damages and losses caused by the floods were worth ₦2.6 trillion.
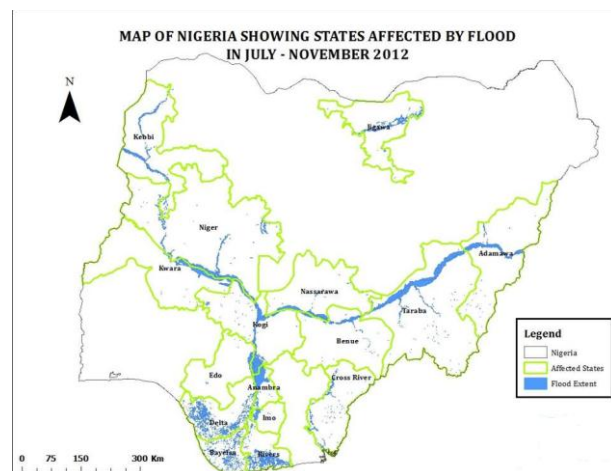
Fig. 1: Location of the study area
Source: NEMA GIS Unit, Abuja, November, 2012

Results and Discussion

The study analysed the demographic characteristics of victims of flood induced crime in urban areas in Nigeria considering specific variables such as age, sex, educational attainment, income and household size.

Table 1: Socio-Demographic Characteristics of respondents

S/N	Research Item	Frequency	Percentage
	Sex Respondents		
1	Male	64	67.4
2	Female	31	32.6
	Age of Respondents		
1	21 – 40years	60	63.8
2	41 – 60years	27	28.7
3	61 – 80years	7	7.4
	Marital Status of Respondents		
1	Single	15	15.8
2	Married	79	83.2
3	Divorced	0	0.0
4	Separated	1	1.1
	Educational Attainment		
1	Non-formal	3	3.2
2	Primary	17	17.9
3	Secondary	62	65.3
4	Tertiary	13	13.7
	Income of respondents (₦)		
1	1-100,000	66	33.7
2	100,001-200,000	27	25.5
3	200,001-300,000	2	2.1
	Household size		
1	1-5	42	44.2
2	6-10	51	53.7
3	11-15	2	2.1
	Total	**100**	**100%**

Source: Fieldwork, 2018

Table 1 shows that the proportion of male respondents represented by 67.4% is higher than the female counterparts represented by 32.6%. The Table also shows that 63.8% of the respondents are within the age group of 21-40years, 28.7% within the age group of 41-60years while, 7.4% are within the age group of 61-80 years, with the mean age of 40years. This means that members of the active age bracket are the most affected in flood induced crimes in urban areas in Nigeria. Marriage status shows that 83.2% of the victims are married with average household size of 6-10 persons represented by 53.7% of the respondents. The level of education of the victims indicated that majority of the respondents represented by 65.3% have secondary education, while 13.7% have Tertiary education.

Impact of flood disaster on crime incidence in urban areas

To explore whether natural disasters influence crime rates, a number of crime occurrences (murder rate, assault, rape, armed robbery rate, etc.), before and after, were plotted against the occurrences during the big flood disaster year of 2012, in Nigeria (see fig. 2). There is clear evidence of a rise in both violent and property crime rates in the affected urban areas during the 2012 flood disaster year. Information from the police crime statistics on crime cases before, during and after 2012 flood disaster year is presented on Table 2.

Table 2: Number of reported crime cases before, during and after 2012 flooding in Nigeria

Crime	Year				
	2011	2012	% change	2013	% change
Murder	126	239	89.7	39	83.7
Robbery	223	191	143.5↓	43	77.5
Grievous harm/wounding	200	340	70.0	163	52.1
Assaults	342	425	24.3	123	71.1
Rape and indecent assaults	6	8	33.3	5	37.5
Theft and other stealing	109	116	6.4	142	22.4↑
Burglary	40	44	10.0	17	61.4

House breaking	289	287	<1.0↓	51	82.2
Store breaking	191	285	49.2	1	99.7
False pretence and cheating	347	444	28.0	33	92.6
Offence against liquor acts	4	6	50.0	4	50.0
Unlawful possession	78	99	26.9	66	33.3

Source: Crime Statistics 2011 – 2012, Police Crime report, 2016

Table 2 shows information on reported cases of crime incidence in flood affected urban areas for 'before' 'during' and 'after' situations. All the selected offences increased during the 2012 flood disaster year, with the exception of robbery and house breaking. Apart from a number of deaths observed in the 2012 flood disaster year, murder cases increased from 126 in 2011 to 239 in 2012 with percentage increase of 89.7%. During the period, grievous harm and wounding increased by 70% from 2011 (before situation) to 2012. Offence against liquor (50%), store breaking (49.2), rape (33.3%), unlawful possession (26.9%), assaults (24.3%) and false pretence and cheating (21.9%) all increased during the period under review (see Fig 2). This can be attributed to chaos created, and break down in social order leading to increased household vulnerability to crime and also more people involving themselves in crime related activities in the area just to make ends meet.
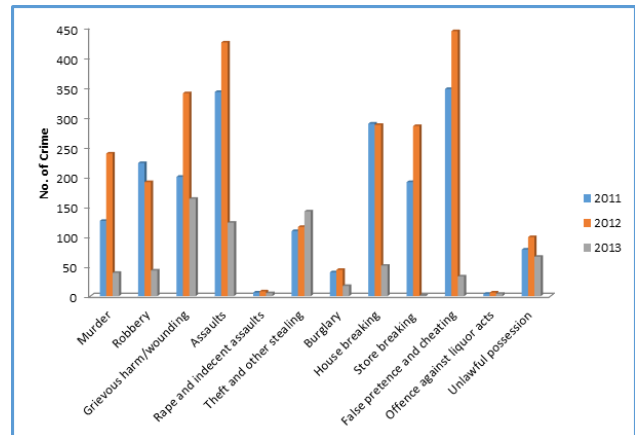

Figure 2: Number of crime before, during and after flood disaster

Crimes experienced during the flood disaster

The study also conducted a survey in urban areas that were affected by the major flood disaster in the region. Information was gathered on both violent and property crimes that occurred during the flood disaster. The information is presented on Table 3 and 4.

Table 3: Violent crimes experienced during/after flooding

S/No	Violent Crime	Frequency	Rank
1	Murder	2	5
2	Assault	67	1
3	Sexual offences	3	4
4	Robbery	14	3
5	Kidnapping	0	0
6	Abduction	0	0
7	Domestic crime	34	2

Source: Fieldwork, 2018

Table 3 shows that assault is the most experienced crime at the heat of the flood disaster in urban areas, followed by domestic crime, robbery and sexual offences as the second, third and fourth most experienced crimes, respectively. This agrees with the work of Roy (2010) where the researcher affirmed that there is clear evidence of a rise in Assaults, domestic crime and robbery during natural disasters, and that periods affected by disaster experience the movements of crime rates.
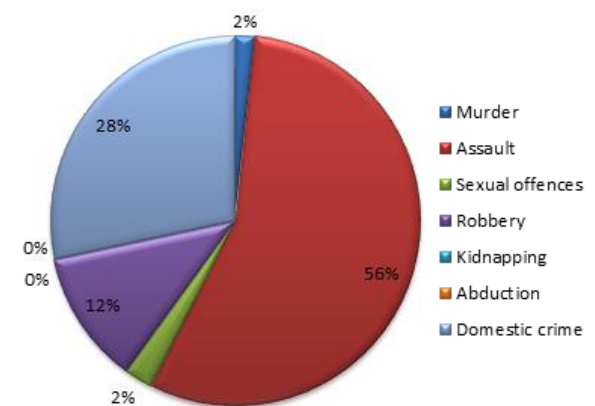

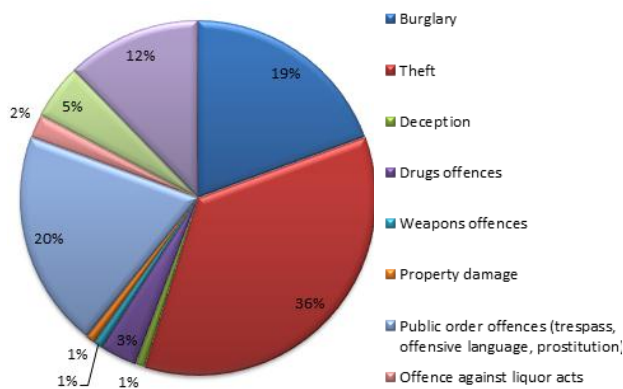**Figure 3:** Violent crimes experienced during the flooding

Among the selected property crimes, property theft was the most experienced property crime in affected urban areas during 2012 flooding in Nigeria (Table 4). This is followed by public offenses (trespass, offensive language, and prostitution). Burglary and other property crimes were the third and fourth most experienced property crimes in affected urban areas during the flooding. This finding also affirms the results of Roy (2010) that crime rates, property crimes in particular, do tend to increase following moderate to big disasters, indicating that any occurrence of flood disaster ranging from moderate to big flood events can lead to moderate to high level increase in property crimes during the events.

Table 4: Property crimes experienced during/after flooding

S/No	Property Crime	Frequency	Rank
1	Burglary	46	3
2	Theft	84	1
3	Deception	2	8
4	Drugs offences	8	6
5	Weapons offences	2	8
6	Property damage	2	8
7	Public order offences (trespass, offensive language, prostitution)	47	2
8	Offence against liquor acts	5	7
10	Traffic offences	12	5
11	Other property crime	29	4

Source: Field work, 2018

Figure 4: Property crimes experienced during/after flooding

Implications of increased crime during flood disaster

Effects of flood induced crime are all-encompassing and adverse to the victims' wellbeing (Pomeroy, 2005; Lurigio & Resick, 1990; Norris & Kaniasty, 1994). Symptoms of anxiety, depression, social dysfunction, loss of confidence, hostility, and fear were prevalent in crime victims.

Anxiety and depression during/after flood induced crime incidence

Anxiety and depression is a major health problem in itself and has been prospectively linked to cardiovascular disease and other serious morbidities. Victims of violent and property crimes commonly develop posttraumatic stress disorder (PTSD), an often chronic condition, associated with severe morbidity and psychosocial impairment. Information on anxiety and depression experienced by victims of flood induced crime in the area is presented on Table 5.

Table 5: Anxiety and depression during/after crime incidence

S/N	Experience	Rating				TWV	ADI	Decision
		4	3	2	1			
1	Lost much sleep over worry	22	49	20	4	279	2.94	Sometimes
2	Felt constantly under strain	14	56	19	6	266	2.80	Sometimes
3	Felt that you couldn't overcome your difficulties	14	57	18	5	268	2.85	Sometimes
4	Feeling unhappy and depressed	19	60	15	1	287	3.02	Sometimes
5	Restless sleep	21	55	16	3	284	2.99	Sometimes
6	Being very nervous person	13	44	32	6	254	2.67	Sometimes
7	Increased feelings of vulnerability	18	36	33	5	251	2.73	Sometimes
8	Increased risk of alcohol or other drug abuse	7	17	24	44	171	1.86	Not often
9	Felt so down that nothing could cheer you up	9	48	25	10	240	2.60	Sometimes
10	Felt down hearted and low	17	49	24	4	267	2.84	Sometimes

Source: Fieldwork, 2018

Table 5 shows that most of the victims of flood induced crime sometimes experience 'feeling unhappy and depressed (ADI=3.02), restless sleep (ADI=2.99), and lost much sleep over worry. This is followed by experience of feeling like they could not overcome their difficulties (ADI=2.85), felt down hearted and low (ADI=2.84) and felt constantly under strain (ADI=2.80). In addition, victims of flood induced crime experienced increased vulnerability to crime (ADI=2.73), being very nervous (ADI=2.67) and felt that nothing could cheer them up (ADI=2.60). However, the experience of increased risk of alcohol or other drug abuse after flood induced crime victimization, was not often(ADI=1.86).

Social dysfunction during and after crime incidence

Table 6: Social dysfunction during and after crime incidence

S/N	Experience	Rating				TWV	SDI	Decision
		4	3	2	1			
1	Been able to concentrate on whatever you are doing	6	25	59	4	221	2.35	Not often
2	Felt that you were playing a useful part in things	1	28	54	11	207	2.20	Not often
3	Felt capable of making decisions about things	8	22	58	7	221	2.33	Not often
4	Been able to enjoy your normal day-to-day activities	5	29	56	5	224	2.36	Not often
5	Been able to face up to your problems	4	29	52	10	217	2.28	Not often
6	Been feeling reasonably happy, all things considered	1	35	52	7	220	2.32	Not often
7	Been unhappy person	9	26	54	6	228	2.40	Not often
8	Didn't do work or other activities as carefully as usual	9	51	28	7	252	2.65	sometimes

Source: Fieldwork, 2017

Table 6 shows that victims of flood induced crime did not often feel that they were playing a useful part in things around their life (SDI=2.20), that they had been able to face to their problems (SDI=2.28), that they had been unhappy person (SDI=2.40) and not been able to concentrate on whatever they were doing (SDI=2.35). However, they felt that sometimes they didn't do work or other activities carefully as usual (SDI=2.65).

Loss of confidence during/after crime incidence

Table 7: Loss of confidence during/after crime incidence

S/N	Experience	Rating				TWV	LCI	Decision
		4	3	2	1			
1	Been losing self-confidence in yourself	20	48	16	11	267	2.81	Sometimes
2	Been thinking of yourself as a worthless person	13	25	37	20	221	2.32	Not often
3	You accomplished less than you would like	25	53	13	4	289	3.04	Sometimes

Source: Fieldwork, 2017

Table 7 shows that, most of the victims of flood induced crime sometimes experienced losing confidence in themselves (LCI=2.81), having accomplished less than they would like to (LCI=3.04), but had not often been thinking of themselves as worthless person.

Table 8: Component Matrix of Induced Crime Implications

Social dysfunction	Depression	Anxiety	Loss of confidence
1. Been unable to concentrate on whatever you are doing (0.817)	Increased feelings of vulnerability (0.717)	Lost much sleep over worry (0.633)	Become a nervous person (0.577)
2. Felt incapable of making decision about things (0.603)	Increased risk of alcohol and drug abuse (0.517)	Felt constantly under strain (0.829)	Been losing self confidence in yourself (0.704)
3. Been unable to enjoy your normal day (0.542)	Felt so down that nothing can cheer you up (0.521)	Feeling unhappy and depressed (0.666)	Been thinking of yourself as worthless (0.653)
4. Been unable to face up to your problems (0.813)	Felt down hearted and low (0.760)	Restless sleep (0.636)	You accomplish less than you would like (0.819)
5. Been feeling reasonably unhappy (0.737)			

From the rotated component matrix in Table 8, four (4) crime induced implications were extracted. These components include social dysfunction, depression, anxiety and loss of confidence.

Social dysfunction: this component was seen as related to social dysfunction emanating from flood induced crime. It is defined by the following variables which loaded high on: been unable to concentrate on whatever you are doing (0.817), felt incapable of making decision about things (0.603), been unable to enjoy your normal day (0.542), been unable to face up to your problems (0.813) and been feeling reasonably unhappy (0.737). The entire social dysfunctional attributes contribute a total eigenvalue of 8.585 explaining 40.88% of variance.

Depression: this component is seen as related to depression from flood induced crime. It is defined by the following variables which loaded high on: Increased feelings of vulnerability (0.717), increased risk of alcohol and drug abuse (0.517), felt so down that nothing can cheer you up (0.521) and felt down hearted and low (0.760). This depression attribute contribute a total eigenvalue of 2.007 explaining 9.56% of the total variance.

Anxiety: this component is seen as related to anxiety from flood induced crime. It is defined by the following variables which loaded high on: lost much sleep over worry (0.633), lost much sleep over worry (0.633), feeling unhappy and depressed (0.666) and restless sleep (0.636). This anxiety attribute contribute a total eigenvalue of 1.821 explaining 8.674% of the variance.

Loss of confidence: this component is seen as related to loss of confidence as a result of flood induced crime. It is defined by the following variables which loaded high on: become a nervous person (0.577), been losing self confidence in yourself (0.704), been thinking of yourself as worthless (0.653) and you accomplish less than you would like (0.819). These attributes contributed a total eigenvalue of 1.358 explaining 6.469% of the variance.

Conclusion and recommendation

The evaluation of natural disaster, crime and its implication is largely invisible in the urban safety and health literature. This study contributes to our understanding of the influence of natural disaster on crime pattern and by extension the implications of flood induced crime in the victim's experience and recovery process. It was found that people felt insecure and that this feeling had negative effects on their individual health and on the wellbeing of the community as a whole. It is therefore highly recommended that there should be the incorporation of high powered synergic security outfits and measures into planning for natural disaster preparedness, mitigation, and adaptation strategies, in order to minimize the incidence of crime, and the victimization of flood affected households in urban areas in Nigeria.

References

Afon, A.O, Abolande, O. And Okanlanwon (2006) User's perception of Environmental Hazards and Risk as a tool in Public Space Management: The Case of Selected Motor Parks in Lagos, Nigeria. *5th FIG regional Conference*, Ghana

Angew, R., (2011) Dire forecast: A theoretical model of the impact of climate change on crime change on crime. *Theoretical criminology, journals* 21-38.

Cater, J. & Jones, T. (1989) *Social Geography: an introduction to contemporary issues*, Colset Private Ltd, Great Britain.

Fabusa, K., (2007) *Crime and risk mapping from historic count data in Leicester City*. Thesis submitted for the Degree of Masters of Philosophy at University of Leicester. Department of Geography Leicester.

Hammond, M. J., Chen, A. S., Djordjevic, S., Butter, D. and Mark, O (2016) Urban Flood Impact Assessment: A State-of-the-art Review.

Harries, K. (2000) *Filters, Fears, and Photos: Speculations and Explorations in the geography of crime, Analysing Crime Patterns: Frontiers of Practice*, Sage Publications, USA.

Intergovernmental Panel on Climate Change (IPCC, 2012), Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation: A special report of working groups I and II of the Intergovernmental Panel on Climate Change. Field, C. B., V. Barros, T.F Stocker, D. Qin, D.J Dokken, K.L Ebi,

M.D Mastrandrea, K.J Mach, G.K. Platter, S.K. Allen, M.Tignor, and P.M Midgley (eds). Cambridge University Press: Cambridge and New York. http://ipcc-wg2gov/SREX/IMAGES/UPLOADS/srex-All_FINAL.pdf

Kwanga, G. M., Shabu, T., Adaaku, E. M. (2017). Natural Disasters and Crime Incidence: A Case of 2012 Flooding in Benue State, Nigeria. *International Journal of Geology, Agriculture and Environmental Sciences* 5(5), 43-48

Lurigio, A. & Resik, and P. (1990). Healing the psychological wounds of criminal victimization: Predicting postcrime distress and recovery.in A. Lurigio, W. Skogan& R. Davis (Eds.) Victims of crime: Problems, policies and programs. Newbury Park, CA: Sage

Miller, G. (2005). *Sustaining the Earth.* USA: Brooks/Cole.

Norris, F.H. and Kaniasty, K. (1994). Psychological Distress Following Victimization in the General Population: Cross-sectional, Longitudinal and Prospective Analysis. *Journal of Consulting and Clinical Psychology,* 62(1), 111-123.

Olatokun, W and Nwonne, S (2012) Determinants of Users Choice of Mobile Service Providers in Nigerian Telecommunication Market, *African Journal of Computer and ICT*, 5(4)

PDNA, (2013). Nigeria Post-Disaster Needs Assessment 2012 Floods, A Report by the Federal Government of Nigeria with Technical Support from the World Bank, EU, UN, and other Partners.

Pomeroy, S. (2005). *The Cost of Homelessness: Analysis of Alternative Responses in four Canadian Cities*. Prepared for the National Secretariat on Homelessness. Ottawa: Focus Consulting Inc.

Roy, S. (2010). *The Impact of Natural Disasters on violent Crime*, University of Canterbury.

Santana, P.; Nogueira, H. (2008), "Environment and Health: Place, sense of place and weight gain in urban areas", Place, sense of place and quality of life, John Eyles and Williams (eds.), 153-165.

Santana, P; Santos, R. & Costa, C (2009) "Walkable Urban Green Spaces: Health Impact Assessment in Amadora, Portugal", *14th International Conference on Urban Planning and Regional Development in the Information Society 2009*. Proceedings.

Shapland, J. and Hall, M. (2007) 'What do we know about the effects of crime on victims?', *International Review of Victimology*, 13, 175-218.

Siman, B. A. (1977). *Crime During Disaster*. Ph.D Dissertation. Department of Sociology, University of Pennsylvania. Philadelphia, Pennsylvania.

Taylor, R. B., and Schumaker, S. A., (1990) Local crime as a natural hazard: Implications for understanding the relationship between disorder and fear of crime. *American Journal of community Pshycology*, 18(5) 619-639.

Vella-Broderick, D. A. (1994). *The development of the M.P.S. Well-being scale.* Unpublished master's thesis, Monash University, Cansfield, Australia.

Wahab, B., (2013) Disaster risk reduction in Nigerian settlement. Disaster risk management in Nigerian urban settlements. Nigerian institute of Town Planners-NITP and Town Planners Registration Council of Nigerians-TOPREC, 15-17

Wamsler, C., and Brink, E., (2014) Moving beyond short-term coping and adaptation. Environment and Urbanization. 26(1) 86-111

Winkel, F.W. (1998). Fear of crime and criminal victimisation: Testing a theory of psychological incapacitation of the 'stressor' based on downward comparison processes. *British Journal of Criminology*, 38, 473-484.

Wisner,C., Blaike, P., Cannon,T., and Davis I., (2003) AT risk: Natural hazards, peoples vulnerability and disasters. Second Edition

Zahran, S., Shelly O.T., Peek, L., and Brody S.D., (2009) Natural disaster and social order: Modelling crime outcomes and disasters in Florida. *International Journal of Mass Emergencies and Disasters*, 27(1) 26-52