



## **Assessing the Psychosocial Impact of Flooding on Residents in Akpabuyo Local Government Area of Cross River State, Nigeria**

*<sup>1</sup>Veronica John Ogar & <sup>2</sup>Daniel Amgboji Upla*

<sup>1</sup>Department of Social Studies and <sup>2</sup>Department of Biology

<sup>1,2</sup>Cross River State College Of Education, Akamkpa - Nigeria

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### **ABSTRACT**

This research is primarily focused on appreciating the full view of elements that constitute the social and psychological impacts of flooding disaster in the area under investigation. The background is informed by the recognition of the peculiar ecological personality under investigation. Properly put, Episodic annual incidents of flooding have been reported about the area with its corresponding structural and physical damages inflicted on the residents. Therefore, from the point of view of problem statement, it has been deemed necessary to turn attention to the crucial elements of the psychosocial impacts of the event in the area with a view to proffering palliative measures to alleviate the full scale incidents of the damage caused the victims. The report is deemed justifiable on grounds that it will elucidate the full view of impacts on the precinct of the social and psychological constraints caused the residents as well as providing information that will be valuable in environmental decision making in addition to providing instruments for mainstream environmental capacity for the present and the future. Accordingly, the objectives are stated along similar lines towards understanding of the severity of the flood menace, appreciation of the full scale impact on those exposed and then making recommendations for policy decision making. The methodology, covers the descriptions of the research design, the area of the study, and the population of the study, sampling procedures, instruments for data collection, data collection procedures and method of data analysis.

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### **Introduction**

Flooding event is a major and far reaching natural disaster that affects all facets of life including the social and psychological perspectives livelihood of communities. The damages caused by flooding have immediate and long term effects on individuals and groups.

Extant literature on the nature of environment and wellbeing revealed that the nature of the environment can influence the psychosocial wellbeing of persons occupying such areas. Flardoy, Mitlin and Satterthwaite (1992) reported that households that are constantly at risk from floods, landslides and other natural disasters that are likely to experience psychosocial disorders, in the form of stress, anxiety depression, fatigue and so on

Sylvia et al (2006) in their study of the health effects of flooding: from England and Wales reported that some flood victims suffer long term mental health effects as a result of their experience from flooding.

Flooding events affect those settling along banks/flood plains of major rivers, coastlands of ocean bodies and seas or lakes and other such aquatic ecosystems. Numerous reports have been provided about the pervading impacts of flooding in different parts of the world including Nigeria. On the global scale, flood incidents have been reported about different coastal locations, the world over with their corresponding devastating effects. In Europe the main rivers such as the Rhine, the Thames and the Nile have caused colossal damages in different times.

"China suffered the worst human catastrophe when the Hwangsi River, rather called China's sorrows" broke through the levees and caused the death of several thousands. In Nigeria, annual flooding events have been reported about different parts of Nigeria. And the most recently reported case was the incidence of Lokoja which occurred last year causing disruption of movement and other economic activities (NIMET 2022 Climate review).

Akpabuyo, the study location, is a contiguous territory from the Bakassi Peninsula, which was ceded from Nigeria following the Judgment of the International Court of Justice (ICJ). Being located close to the Atlantic Ocean in the area around the Bight of Biafra, it is evidently a flood prone zone like its contiguous territory in Anantiga in Calabar South which is a kind of estuarine coastland with its low lying coastland that is liable to submergence by flooding.

This research is focused at understanding of the frequency and severity of the flood incidence in the area as well as investigating the impacts of the events on the residents social, and psychological well beings and possibly to explore the level of vulnerability and adaptation of the residents to the menace of flooding.

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## Statement of the problem/justification

Flooding is a significant, far-reaching environmental problem that has received national, regional and global concern. This concern has necessitated several research undertakings whose results have yielded significant insights with the true perspectives of flooding events and their impact on the physical, mental and social wellbeing of individual in different times and places. Physically, it has been reported v chronic health effects following after flood disaster events have been documented in the literature (Hajal et al 2003).

Janerich et al (1981) reported that Leukemias and Lymphomas incidents

occurred in western New York following after a major flood which occurred in Chenango River Valley in 1972.

Numerous investigations have been carried in different regions of the developed world to provide information on the various impacts caused by flooding in different parts of the world. Accounts of carbon monoxide poisoning following a flood incidence in Rhine river in 1988 was provided by studies carried out by Duclax et al (1991). Bennet et al (1970) reported on the incidence of the flash flood of 1988 in Bristol which caused large scale mortality. Following investigations by Plutor & Norris (1988), it was recognized and reported that flood exposure by elderly persons resulted in modest physical health decline such as functional impairment and fatigue.

It was equally reported that there is often an increase in psychosocial symptoms and post traumatic syndrome (PTSD) following a study carried out by IFRC (1988) during the events, of a 2 months flooding which occurred in Poland in 1997.

Impliedly, following the few examples cited above, a plethora of research studies have been conducted on the occurrence and aftermath of flood incidents in developed world areas but for the developing world areas efforts are at best scant. This study is therefore spurred by the need to investigate and explore the various ramifications of flood incidents that are ravaging the area and their corresponding psychosocial impacts on the residents.

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## Justification/rationale for the study

As earlier stated in the background to this study flood occurrence/incidence is a major environmental problem that must be given a prime concern in the environmental agenda of any part of the world especially coastal locations such as Akpabuyo which lies fronting the Gulf of Guinea in the Atlantic Ocean in the vicinity of the Bight of Biafra.

A grave rationale for this study remains that this study remains one in so many previous undertakings that paid prominence to the psycho-social impacts of flooding on the people. To the contrary many government reports globally do pay grave premium to the economic and somatic impacts of flooding on the people. The psycho-social impact of flooding relates to the mental and emotional effects that must ensue during and after the traumatic experience of flooding on the people. Some of these disorders include emotional instability, stress reactions, anxiety and trauma (USIP and Uduak 2020).

These anomalies often times may lead to high-order psychotic cases that must be nipped in the bud if proper information is available. Early warning signals may be provided with respect to end-time psychiatric cases if the precursors of these incidents are discovered through findings derived from the study of this nature.

Residential choice making or property development counseling could benefit from the results of this study. Urban environmental planning and design could utilize the results of this study for urban renewal and rehabilitation programmes.

### Objectives of the study

The research objective is as follows.

Assessment of psychological/physical impact of the flood incidence on the residents

### Research hypothesis

There is no significant variation in the psychosocial impact of flooding across the areas liable to flood in Akpabuyo

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## Literature

Psychosocial disorders resulting from flooding events are quite pervasive and far reaching in its effects on the vulnerable population. They include feelings of shock, anxiety, fatigue, mental and physical exhaustion including other stressors such as mental upthrust and worry. Sometimes, the long term impact may lead to enduring psychotic cases caused by feelings of loss of dear ones and property damage. Also it has been documented in the literature that people who live in flood plains or non resistant buildings or lack of warning systems and awareness of flooding hazard, are more vulnerable to floods (WHO 2020).

Two categories of flood impacts have been documented in the literature to include direct and indirect impacts (USIP and Uduak 2020). Direct impacts have been recognized as those immediate damages that ensue due to physical contact with the flood water and persons, properties or valuables or other objects. These may be in the form of destruction of buildings, loss of lives, injuries, disease infestation and so on.

To the contrary indirect impacts refer to secondary damages that may be predicated on direct impacts such as loss in productivity caused by effect of the flood event, ill health, population displacement etc.

Both direct and indirect impacts have been further categorized into tangible and intangible impacts (USIP and Duak 2020). Tangible impact are those quantifiable in economic terms such as loss of valuables while intangible impact are those that are not immediately quantifiable such as ill health resulting from the flood effects or loss of a dear one (Philip et al 2017). Psychosocial impacts have equally been classified in the literature as are briefly be brought out below.

### **Typology of psycho social impacts of flooding**

Broadly- two categories of psychosocial impacts have been documented in the literature to include immediate experience and post event experience (USIP and Uduak 2020).

#### **On the spot or immediate experience**

As expressed by WHO (1992) the immediate experience remains the result of horrifying dimension of disaster related to physical injury, traumatic experience of helplessness, separation ... over expression of maladaptive behavior during exposure such as paralyzing anxiety uncontrolled responses and group whim which may manifest at this point. Predicated on this, it has been revealed from previous studies that effective coping strategies will depend on training and education, previous experience and so on. And it has also been recognized that the ability to cope with the disaster at this stage will determine the level of the psycho social impacts.

#### **Aftermath experience or post event experience**

This relates to the impact experienced after the episode of the flood event. In line with WHO findings (1992) many different emotional upthrusts may arise after the flood event. For instance in the beginning there may be feeling of elation or numbness relief accompanied by strong positive feelings of survival at the end but gradually through recollections the stress effect may show though in short lived form (USIP & Uduak 2020).

Following the above authors, common post disaster feelings may include intense feelings of anxiety accompanied by flash backs or intrusions as well as brightening memories of the experience and especially life threatening or gruesome encounters with death. These symptoms are expected to be ephemeral or short-lived but where they remain enduring over weeks, months or years it becomes post traumatic stress Disorder (PTSD). In line with WHO (1992) findings and observations, there may be spontaneous recovery.

### **General Health Effects of flooding**

Prodigious literature has been amassed to substantiate the overall health effects of flooding in different places and times.

A spectacular one the general mishap experienced by victims of flood events was provided by study carried by Othman et al (2022) on the unprecedented flood which took place in the eastern coast of Malaysia in 2021 with devastating catastrophe. As the report went in part, the victims who were already traumatized by the loss of their property and loved ones, once again have to face issues such as discomfort, overcrowding (Barra 2021). They were also reported to experience long term effects such as post traumatic stress disorder (PTSD), hopelessness and anxiety etc (Husna 2021).

In a similar undertaking the mental and social effects of flooding events were vividly highlighted. Forthergite et al (2021) in their review of flood impact in Europe reported that flood events are associated with psychosocial and post traumatic stress disorder (PTSD).

In another undertaking, Senarath (2011) discovered that a significant number of children who have been exposed to natural disaster experience short term and long term psychological distress.

### **Social impact**

Social impacts are enormous as existing works on the subject matter have been reported. Randeniyas work (2018) gave a comprehensive account of how some social impacts are manifested. He reported that most of the female victims highlight on issues of privacy as regards how to change their wears where they are caluttered or holed up at their evacuation centres. On the other hand some are quoted as responding positively on how their friends and relatives assisted them warmly. On a similar note, the victims were said to be assisted by school teachers, religious centres media and other volunteers. Yet still, it was reported that the most significant social impact on the victims was the need to relocate during and after the flood. The victims may be relocated to different destinations but howbeit, the situation may be uncomfortable for them. Issues of privacy, crowding and insufficient basic facilities may be the cases in point (Yosuf and Kadir, 2017).

The most prominent sociological effect from any disaster is a matter of relocation, either totally to new homes or to rehabilitate, the existing one. On this note Quarantetli (2005) discovered that disaster victims go through four stages of rehoming such as: (i) The temporary rescue centre, (ii) overnight rescue centre, (iii) the location where the victims will build or rebuild their homes and, (iv) the permanent home where they finally settle down.

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## **Methodology of the study**

### **Study design**

The study is a field survey defacto design aimed at collecting data from respondents who have been victims of previous flood incidents in the area under investigation.

### Area of study

Akpabuyo Local government Area is an area contiguous with the two metropolitan local governments of Calabar municipal and Calabar south L.G.As respectively. Before its creation in the year 1985, it was part and parcel of the old Calabar territory which was politically delimited into the three separate geopolitical entities today. In all respects, it has similar or the same ecological personalities like the two sister geographical units. It is situated to the west of Calabar South and North fronting the contiguous coastal environment of the Gulf of Guinea around the area of the Bight of Biafra which later was carved out as Bakassi Local Government, part of which has been ceded to Cameroun following the rulings of the International Court of Justice (ICJ) in the Hague, Netherlands. It has a prodigious coastal marine environment which provides the ecological regime of flooding. Like Calabar South to the east, it experiences abundant annual rainfall which contributes to its flooding menace most of its mangrove marine coastlands are permanently waterlogged providing ample opportunity for fishing and other aquacultural engagements. Currently part of its territory has been conceded for the rehabilitation of the Bakassi displaced refugees.

Flooding is a recurrent perennial environmental hazard in the area caused by its marine location and other atmospheric weather regimes of adequate precipitation.

### Population

The population comprises the entire residents of the administrative territory of the Local Government Area and the currently ceded territory of the displaced Bakassi people.

### Sampling procedure

Multistage sampling was employed focusing primarily on areas most liable to flooding. Following this systematic sampling was engaged based on selection of alternate residencies or households in the clusters delimited.

The next stage was stratified sampling using the criteria of sex and age e.g. male/female residents, aged/youths residents.

### Instruments for data collection

The questionnaire was used as the primary source of data collection as well as observation and checklists. Other secondary source approach was engaged as the need arose.

### Method of data collection

Field survey data was collected as follows:

- (i) Field reconnaissance visit was undertaken to achieve field legibility assessment and field penetration strategy.
- (ii) This was followed by area/mapping and designation of flood prone domains.
- (iii) The questionnaire was primarily engaged in eliciting information from respondents.
- (iv) Other surrogate measures such as observation method and the use of the checklist.
- (v) Instruments were administered and retrieved defacto.

### Method of Data analysis

Data was analysed using the statistical technique of one-way analysis of variance (ANOVA).

Table 1 below conveys information derived from respondents responses on impact of flooding and the psychosocial implications on residents in the areas under investigation.

## Data presentation and analysis

TABLE 1 below conveys information on respondents affirmation to flood incidents impact on them

Table Residents affirmation on flood incident impacts

N/s	Area's affected	Affirmation on flood incidence Category					Total
		Incident category affirmed to					
		Injury	Prosperity	Displacement	Deaths	PJSD	
1.	Akansoko	26	10	14	11	6	67

2.	Ikot Nakanda	28	20	24	15	27	114
3.	Iko Ene	10	15	25	17	22	89
4.	Ikot Eyo	5	4	28	18	15	70
5.	Idundun	26	9	40	26	41	142
6.	Anayangaje	42	15	38	19	17	131
7.	Anengeje	45	28	14	25	16	248

From table 1 above the affirmation responses are those who responded positively to incidents impact prevalence. Seven areas liable to flooding incidence were purposively selected for investigation. The horizontal axis conveys the total values of all the impact categories. While the vertical scale depicts the value of particular impact nature. From these, the hypothesis testing and the corresponding statistical analysis was undertaken as flows

### Research hypothesis

Ho: there is no significant variation in the psychosocial impact of flooding incidence across the areas liable to flooding in Akpubayo Local Government Area, Nigeria

Table 2: The result of analysis of variance

**Table 2: The result of analysis of variance**

Source of variable	Sum of square	df	Mean square	F <sub>cal</sub>	Sig
Psychosocial impact of flooding	120.87	4	643.5		
Flood incidence	360.10	30	133.7	4.84	.00
Total	480.91	34			

### Significant at 0.05 level

Since the f-cal 4.84 greater than the F- value .3.02 it therefore mean that the null hypothesis is rejected and this alternate hypothesis is adopted thus there is a significant variation in the psychosocial impact of flooding across the areas liable to flood in Akpubayo

### Results/ findings

Following the decision rule above, the null hypothesis was rejected indicating that there is significant variation in the psychosocial impact of flooding on residents in the area under investigation. The result demands a number of explanations which border on parameters of locations, age, sex, socio economic status and incidence magnitude or severity.

Locationally it was reported that these who live in flood prone zones and areas liable to flooding are liable to suffer or experience more severe flood affects, those removed from it (who, 2020) Psychosocial impact are also two dimensional in terms of their pact (Usip and Uduak, 2020). The direct impacts following the report of the above authors refers to incidents that produce direct physical contact or damages to persons and properties.

Indirect impacts refers to impacts that are predicated on the direct impacts experiences.

The variegated nature of the impacts has been clearly substantiated based on an earlier WHO findings (1992) which report that "many emotional upthrusts may arise after a flooding event.

That at the beginning there may be a feeling of elation or numbness relief accompanied by strong positive feelings of survival.

Usin and Uduak's (2020). That common post disaster affects may include in intense feedings of anxiety accompanied by backs or intrusions." The statement conform to the result of the hypothesis testing that there is a significant variation in the psychosocial impact of flooding on flood victims generally

Age criterion has equally been implicated as factors in the explanation of differences in the psychosocial impact of flooding on persons (Senarath, 2011). This author reported that a significant number of children who suffer natural disaster suffer shorter and long terms psychosocial distress.

Deriving from the field reports/ findings six incidents categories were investigated to include physical injury, property loss, displacement by the flood incidents, deaths/loss of lives and post traumatic stress disorder (PTSD).

Equally seven flood liable areas were selected and investigated to include, Akamsoko , Ikot Nakanda Ikot Ene , Ikot Eyo, Idundun, Anyanghase and Anengeje.

The incident domains area purposively selected on the basis of their ecological peculiarities of perennial flooding events.

The impact incidents derived from field survey for each domain showed that Anengeje has the modal incidence rate of 248 respondents affirmation while Akansoko has the least value of 67 incidence affirmation.

Following next is Idundun with affirmation value of 142 incidence rate. Surrogate explanations gained from the respondents revealed a positive correlation between flood frequency and intensity occurrence and casualty rate as will be read-off from the raw field data on table one. The domains explored revealed quite a variegated pattern inherently conformal with the decision rule of the tested hypotheses.

In all, the required approaches to meet the challenges of the flood menace through mitigation and /or adaptation will equally be circumspect.

Further enquiries may focus on vulnerabilities rates or coping strategies by residents

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