



Disasters in Nigeria: A Public Health Perspective

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KEYWORDS

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ABSTRACT

Background: Nigeria is the most populous black nation on earth with some fragile demographic, socio-economic and health indices. The country has been having its own share of both natural and man-made disasters. This paper discussed an overview of disasters and some socio-demographic characteristics of Nigeria, factors in vulnerability of disasters, public health impacts and issues in disaster management in Nigeria among others from a public health perspective and the way forward.

Methods: The authors undertook full searches (September-November, 2012) of original research, reports and reviews using Medline, PubMed, Embase and World Health Organisation (WHO) database. Search words were disaster, disasters in Nigeria, and public health impacts. Part of the data used was personal communications and in-press publications.

Results: The results revealed significant number of disasters in Nigeria, such as plane crashes, oil pipeline fire explosions, collapsed buildings, terrorist attacks, civil strife, and flood, among others. Some of the identified issues that hampered quick response and recovery included poor and ineffective search and rescue operations, poverty, poor public and community education on disaster management, among others.

Conclusion: There is need for public and community education on disaster and its management, disaster preparedness, well-coordinated and effective search and rescue operations, capacity building, tackling corruption and poverty reduction.

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INTRODUCTION

Disaster can be defined as any occurrence that causes damage, ecological disruption, loss of human life or deterioration of health and health services on a scale

sufficient to warrant an extra-ordinary response from outside the affected area or community¹

Disasters are often classified according to their

speed of onset (sudden or slow), or according to their cause (natural or man-made).

Natural disasters are caused by biological, geological, seismic, hydrologic or meteorological condition or processes in natural environment. These types of disasters naturally occur in proximity to, and pose a threat to, people, structures or economic assets. Though weather and geologically related disasters are considered to have generated the greatest number of deaths and economic loss, disasters generated by humans are now increasingly important particularly in low income countries.

The list of natural disasters include weather phenomena such as tropical storms, extreme heat or cold, winds, floods, earthquakes, landslides and volcanic eruptions.

Human-made disasters are disasters or emergency situations where the principal, direct cause(s) are identifiable human actions, deliberate or otherwise. Apart from “technological” and “ecological” disasters, this mainly involves situations in which civilian populations suffer trauma, casualties, losses of property, impediment of basic services and means of livelihood as a result of war or civil strife, for example. Human-made disasters/emergencies can be of the rapid or slow onset types, and in the case of internal conflict, can lead to “complex emergencies” as well.²

Disasters caused by humans have included transportation accidents, industrial accidents, release of hazardous materials and the collapse of buildings. Rapidly increasing transport of people and commodities across continents means that transportation disasters pose increasing threats to millions.

Disaster risk is on the rise throughout the world.³ Over the past two to three decades, the economic

losses and the number of people who have been affected by natural disasters have increased more rapidly than both economic and population growth.

The physical, social and economic losses caused by these disasters are particularly harsh for developing countries since they have a long-range and depressive effect in the development process. The impacts of the disasters are deeply related with the socio economic conditions, tradition, culture, and unchecked climate changes of the communities.

Each year approximately 300 natural disasters occur worldwide, exacting a human toll of approximately 250,000 lives. In the past 20 years, natural disasters have claimed the lives of 3 million people and have negatively affected the lives of at least 800 million more.⁴

“Natural hazards will always challenge us. But it is within our power to ensure that poverty does not turn hazards into unmanageable disasters. And it is within our power to join forces, address the immense complexities of disaster reduction, and build a world of resilient communities and nations equipped to counter the adverse impact of natural hazards and related environmental and technological disasters”.

Mr. Kofi Annan (former UN Secretary General)

The objectives of the study include an overview of disasters and some socio-demographic characteristics of Nigeria, factors in vulnerability of disasters, public health impacts and issues in disaster management in Nigeria among others from a public health perspective and the way forward.

METHODOLOGY

The authors undertook full searches (September–November, 2012) of original research, reports and reviews using Medline, PubMed, Embase and World Health Organisation (WHO) database. Search words were disaster, disasters in Nigeria, and public health impacts. Part of the data used was personal communications and in-press publications

RESULTS AND DISCUSSION

Overview of Nigeria

Nigeria is the most populous black nation on earth and has nearly about one quarter of Sub-Saharan Africa's population. It is bordered by the Gulf of Guinea, Cameroon, Benin, Niger and Chad. Some of the socio-demographic indices of Nigeria are summarized in Table I.

Disasters occurrence in Nigeria

Nigeria has had more than its fair share of disaster with corresponding toll on human and financial resources.⁶ Disasters in Nigeria included flooding, incessant collapse of building, plane crashes, oil pipeline and tankers' explosions, fire outbreaks, ruthless killings by kidnappers, civil unrest protesters and terrorists among others. The various disasters that have occurred in Nigeria over the past 10 years can be categorized into 4; these are summarized in Table II.

Reports have indicated that Nigeria may have lost over N36 billion assets to fire incidents between 2003 and 2006.⁶

Most of the disasters involving airplanes, floods and building collapse recorded high death toll because the victims never got rescued until several hours or days.⁶ These have been traced either to the inability of the relevant agencies to provide adequate equipment for such rescue operations or the non-existence of a disaster management

structure in such locality.

It is a well-known fact that the frequency of accidents / disaster events may be similar everywhere in the world, but the most crucial difference of note is in the promptness and quality of the search and rescue operations during response. This is a major and fundamental problem, not only in Nigeria, but in many parts of Africa.⁶ The crash of a United States airliner into the Hudson river in New York and the speed at which all the 155 passengers were rescued from the freezing river in January, 2009 made many to reflect on Nigeria's search and rescue methods usually coordinated by National Emergency Management Agency (NEMA)⁶ (Figure 1,2 & 3). NEMA was established by Act 12 as amended by Act 50 of 1999, to manage disasters in Nigeria. It was also created to tackle disaster related issues through the establishment of concrete structures and measures; such as the education of public in order to raise their level of awareness and reduce the effects of disasters in the country.⁶

FACTORS CONTRIBUTING TO DISASTERS VULNERABILITY

Poverty

The most important single influence on the impact of a disaster is poverty. All other factors could be lessened if the affected population were not also limited by poverty. Virtually all disaster studies show that the wealthiest of the population either survive the disaster unaffected or are able to recover quickly.²

Across the broad spectrum of disasters, poverty generally makes people vulnerable to the impact of hazards. It also explains why people in urban areas are forced to live on hills that are prone to landslides, or why people settle near volcanoes or rivers that invariably flood their banks.

Table I: Selected socio-demographic indices of Nigeria⁵

| Variable | Statistics |
|--|-------------------|
| Population | 154,729,000 |
| Annual growth rate (%) (1999-2009) | 2.4 |
| % of Population living < US\$1 per day(2000-2006) | 64.4 |
| Life Expectancy (Years) at birth(2007) | |
| Male | 53 |
| Female | 54 |
| Mortality | |
| Infant mortality rate per 1000 live birth (2009) | |
| Male | 92 |
| Female | 80 |
| Under 5 mortality rate per 1000 live birth (2009) | |
| Male | 142 |
| Female | 143 |
| Maternal mortality ratio per 100,000 live birth (2008) | 460- 1500 |
| Malaria mortality rate 100,000 population | 146 |
| Water and Sanitation (2008) | |
| % of population with improved water sources | |
| Urban | 75 |
| Rural | 42 |
| % of population with improved sanitation | |
| Urban | 36 |
| Rural | 28 |
| Health workers per 100,000 population (2000-2010) | |
| Physicians | 4 |
| Nursing and midwifery personnel | 16.1 |
| Dentistry personnel | 0.3 |
| Pharmaceutical personnel | 1.3 |
| Environmental and public health workers | 0.3 |
| Community health workers | 1.4 |
| Hospital beds per 10,0000 population | 5 |
| General expenditure on health as % of total expenditure on health | |
| 2000 | 4.2 |
| 2008 | 6.4 |



Figure 1: National Emergency Management Agency (NEMA) in Abuja, Nigeria
(Source- PM News)

Increasingly, poverty also explains why many people are forced to move from their homes to other parts of their countries or even across borders to survive. Such crisis-induced migration poses considerable challenges both in terms of immediate assistance to the displaced and of longer-term development.

Nigeria is the largest country in West Africa with a GDP of US\$36 billion. Per capita income is about US\$300, below the level at the time of independence. Nigeria's total debt was estimated at US\$28.8 billion at the end of 1998. This represents a debt/GDP ratio of about 70%. Poverty in Nigeria is more widespread in the northern parts of the country, but more intense and severe in the riverine and remote southern areas. Urban poverty is on the rise and often severe. It is estimated that about 48% of urban dwellers are living in poverty. About 30 million people were defined as extremely poor in 1996 compared to 4 million in 1980.⁹

Also, it has been established that, Nigeria ranks

158th of 177 countries measured in the United Nations Human Development Index¹⁰ While the share of Nigeria's population living below the poverty line has fallen from 70 percent in 1999 to 54 percent in 2005, over half the population lives on less than US\$1 per day.¹¹ This translates into approximately 80 million Nigerians living in poverty. Recent report showed that over 64% of Nigerians earn less than \$ 1 a day (Table I). Only china and India have larger populations of poor people.¹²

Population growth

There is an obvious connection between the increase in losses from a disaster and the increase in population. If there are more people and structures where a disaster strikes, then it is likely there will be more of an impact. The growth of population has been so spectacular that it is inevitable that more people will be affected by disaster because more will be forced to live and work in unsafe areas.



Figures 2 & 3: Rescue workers and a trapped victim in a collapsed building
(source- National Mirror)

Increasing numbers of people will be competing for a limited amount of resources (such as, employment opportunities, and land) which can lead to conflict, which may result in crisis-induced migration. Such growth occurs predominantly in developing countries, resulting in various contributors to disasters.

In Nigeria, the picture is not different; about 45% live in the urban areas. The significant trend has been the spectacular rate of the country's urbanization, which average 5.5% yearly. This is about the highest urbanization rate in the world. Thus, Nigerian cities of today face numerous problems these include urbanization, deteriorating environment, urban decay, un-cleared refuse, flooding, erosion and pollution.⁹

Rapid urbanization

Rapid population growth and migration are related to the major phenomenon of rapid urbanization. This process is also accelerated in developing countries. It is characterized by the rural poor or civilians in an area of conflict moving to metropolitan areas in search of economic opportunities and security. These massive numbers of urban poor increasingly find fewer options for availability of safe and desirable places to build their houses. Also, competition for scarce resources, an inevitable consequence of rapid urbanization, can lead to human-made disasters.

Many landslides or flooding disasters are closely linked to rapid and unchecked urbanization which forces low-income families to settle on the slopes of steep hillsides or ravines, or along the banks of flood-prone rivers. Many earthquake victims in urban areas have been impoverished families whose sites have failed rather than their houses, usually through landslides onto the house or out from under it.²

Nigeria is the most populous country in Africa with a population of over 150 million and population growth rate of 2.4 % (Table I). It is estimated that there will be 182 million Nigerians by 2015 and with the same population growth rate, by 2030 it is estimated that there will be 275 million Nigerians.¹³ In addition, 'more than seven cities have population that exceeds 1 million' while the population of Lagos and Kano is currently over 9 million (2006 Census). Currently, the urbanization rate in Nigeria is 5.5% with an urban unemployment rate estimated to be 10.8%.¹³ Furthermore, the proportion of the population living in the urban centres has risen from 15% in 1960 to 43.3% in 2000 and is projected to rise to 60% by 2015. Total area taken up by urbanization in Nigeria during the same period increased by 131% from 2,083 sq. km in 1976 to 5,444 with an average rate of urbanization estimated to be 3.7% per year.¹³ The number of urban centres i.e. settlements with population of 20,000 or more increased from 56 in 1953 to 359 in 1991 and 450 in 2000. The drivers of urbanization in Nigeria include- high population growth rate, concentration of development activities in urban centres, rapid growth of formal education and rural-urban wage differentials.⁹

Transitions in cultural practices

Many of the inevitable changes that occur in all societies lead to an increase in the societies' vulnerability to disasters. Obviously, all societies are constantly changing and in a continual state of transition. These transitions are often extremely disruptive and uneven, leaving gaps in social coping mechanisms and technology. These transitions include nomadic populations that become sedentary rural people who move to urban areas, and both rural and urban people who move from one economic level to another. More broadly, these examples are typical of a shift from non-

industrialized to industrializing societies. One example of the impact of these transitions is the introduction of new construction materials and building designs in a society that is accustomed to traditional materials and designs. This often results in new materials being used incorrectly. In disaster prone areas, inadequate new construction techniques may lead to houses that cannot withstand earthquakes or wind storms. Compounding this problem is the new community where the disaster survivors find themselves may not have a social support system or network to assist in the relief and recovery from the disaster. The traditional coping mechanisms may not exist in the new setting and the population becomes increasingly dependent on outside interveners to help in this process. Conflicting as well as transitional cultural practices can also lead to civil conflict, for example, as a result of communal violence triggered by religious differences.

Environmental degradation

Many disasters are either caused or exacerbated by environmental degradation. Deforestation leads to rapid rain runoff, which contributes to flooding (fig 4 & 5). The destruction of mangrove swamps decreases a coast line's ability to resist tropical winds and storm surges. The creation of drought conditions—and the relative severity and length of time the drought lasts—is mainly a natural phenomenon. Drought conditions may be exacerbated by poor cropping patterns, overgrazing, the stripping of topsoil, poor conservation techniques, and depletion of both the surface and subsurface water supply and to an extent, unchecked urbanization.

Lack of awareness and information

Disasters can also happen because people vulnerable to them simply didn't know how to get

out of harm's way or to take protective measures. This ignorance may not necessarily be a function of poverty, but a lack of awareness of what measures can be taken to build safe structures on safe locations. Perhaps some people did not know about safe evacuation routes and procedures. Other populations may not know where to turn for assistance in times of acute distress. Nevertheless, this point should not be taken as a justification for ignoring the coping mechanisms of the majority of people affected by disasters. In most disaster-prone societies, there is a wealth of understanding about disaster threats and responses. This understanding should be incorporated into any effort to provide external assistance.

War and civil strife

War and civil strife are regarded as hazards, that is, extreme events that produce disasters. War and civil strife often result in displaced people, a target population of this training programme. The causal factors of war and civil strife include competition for scarce resources, religious or ethnic intolerance, and ideological differences. Many of these are also byproducts of the preceding six causal factors of disasters (fig 6).²

PUBLIC HEALTH IMPACT OF DISASTERS

The impacts of disasters on health depend on the disaster's type and time of onset. Sudden disasters such as earthquakes pose greater threats to health than slow onset disasters.¹⁴ The actual and potential health problems resulting from disaster are multifaceted. They may be related to food and nutrition, water and sanitation, damage to social infrastructures and population displacement, morbidity and mortality, mental health, climatic exposure and shelter, communicable diseases.¹⁵

Table II: Some disasters that have occurred in Nigeria⁷

1 Industrial/Technological Accidents

Under this heading, some of the disasters that have occurred in Nigeria include-

- ✓ On 10th July, 2000, a pipeline in Nigeria exploded killing about 250 villagers accompanied by wild fires burning out of control over about 20 km from the town of Jesse, Delta State.
 - ✓ On 27th January, 2002, at least 660 people were drowned and thousands were rendered homeless after a multiple bomb explosions at a Nigerian Military armoury in Lagos, triggered by an accidental fire. Mass panic ensued.
 - ✓ The 2002 textile factory fire accident in Lagos killing hundreds of workers.
 - ✓ Plane crash incidents, the most recent being the 10/22 Bellview airline flight 210 crash near Lagos in which 117 people died.
 - ✓ On Sunday, 3rd June, 2011 Dana MD 83 aircraft with registration number 5N-RAM came down on a two-storey building around Ishaga area of Lagos State, killing all 153 persons on board.
 - ✓ On 22nd October, 2005, a boeing 737-200 belonging to Bellview airline crashed in Isa in Ogun State three minutes after it took off
 - ✓ Also, on Saturday, 9th December, 2005, a Sosoliso DC-9 aircraft burst into flame on landing at Port Harcourt international airport, killing 110 persons in the plane with only survivor.
 - ✓ Other plane crash disasters include the Hercules C-130 plane crash at Ejigbo, a suburb of Lagos that killed 172 young military officers with no survivor and the Makurdi Dornier 228 air mishap that claimed the lives of 14 military officers
-

2 Urban Violence, Civil Strife and Conflicts:

Some of these are related to community land resource ownership; for instance,

- ✓ On 4th June, 1999, ethnic clothes flamed up in Nigeria's southern oil industry hub of Warri, Delta State. Dozens of people were reported dead in six days of fighting.
- ✓ On 19th July, 1999 at least 60 people died in clashes between Hausa and Yoruba tribes near Lagos.
- ✓ On 26th July, 1999, troops were sent to Kano after at least 60 people were killed in renewed ethnic clashes in northern Nigeria. Several incidents of urban violence occurring frequently in major urban centres, claiming hundreds of lives and property.

3 Property Rights and Unequal Sharing of Benefits from Natural Resources

- ✓ On 1st January, 1999, at least 19 people died in clashes in Nigeria's oil region after an ultimatum to oil firms to leave ethnic Ijaw areas on 3rd June, 1999, local youths set fires at four separate points on the Warri-Kaduna products pipeline near the village of Adeje, after police arrested suspected product thieves. The number of dead was undetermined.

4 Rural and Urban Poverty which Lead People to Taking Deadly Risks to Get Money

- ✓ On 18th October, 1998, fire engulfed more than 2000 villagers who were scrambling for petrol near a ruptured pipeline in Jesse outside Warri. Nearly 1000 people were killed.
 - ✓ On 14th March, 1999, at least 50 villagers who were scooping up gasoline from a broken iproducts pipeline at Umuichiechi- Umungbede village in Abia State were burned to death after an explosion.
 - ✓ There have been several incidences of pipeline vandalism aimed at siphoning oil in different parts of the country especially Lagos, Ibadan and the Niger Delta leading to thousands of death.
-

Table III: Highlights and Spatial Distribution of Major Disasters in Nigeria⁸

| S/ No | State | Types of major disasters | Remark |
|-------|-------------|--|---|
| 1 | Abia | Rainstorm: soil erosion & market fires | Soil erosion is a prevailing market fires frequent |
| 2 | Adamawa | Armed banditry, flood, soil erosion | Soil erosion is a prevailing disaster |
| 3 | Akwalbom | Flood, rainstorm and fire | Soil erosion is a prevailing disaster |
| 4 | Anambra | Rainstorm and armed banditry & soil erosion | Soil erosion is a prevailing disaster |
| 5 | Bauchi | Fire and windstorm, religious crisis | Armed banditry is rampant |
| 6 | Bayelsa | Flood & coastal erosion, oil pollution | Oil pollution & youth restiveness are the commonest problem |
| 7 | Benue | Communal clash & bush fire, flooding | Communal clashes & fire disasters are the commonest crises |
| 8 | Borno | Desert encroachment, fire and flood | Desertification is the major problem |
| 9 | Cross River | Fire disaster & oil pollution | Oil pollution if the major problem |
| 10 | Delta | Flood, rainstorm, oil pollution, youth unrest | Oil pollution if the major problem and youth unrest |
| 11 | Ebonyi | Soil erosion, bush fires | Soil erosion and bush fire are the commonest problem |
| 12 | Edo | Flood and rainstorm, oil pollution & youth restiveness | Oil pollution & youth restiveness are the prevailing problems |
| 13 | Enugu | Soil erosion, rainstorm & flood | Rainstorm & soil erosion are common |
| 14 | Ekiti | Rainstorm, flood | Rainstorm & soil erosion are common |
| 15 | Gombe | Desertification | Desertification and rainstorm are common |
| 16 | Imo | Rain and windstorm, soil erosion | Soil erosion is he major problem in the area |
| 17 | Jigawa | Flood, fire, windstorm and flood | Desertification is the major problem |
| 18 | Kaduna | Fire, rainstorm, windstorm and communal clash, flood | Ethnic-religious clashes are the commonest problems in the area |
| 19 | Kano | Flood, fire, windstorm and communal clashes, plane crash | Ethnic-religious clashes are the commonest problems in the area |
| 20 | Katsina | Fire, windstorm and flood | Desertification is the major problem |
| 21 | Kebbi | Fire, windstorm and flood | Desertification is the major problem |
| 22 | Kogi | Flood, fire and rainstorm | Rainstorm & bush fires are the major |

Table III: Continued

| | | | |
|----|----------|---|--|
| 23 | Kwara | Flood, fire and rainstorm | Rainstorm & bush fires are the major problem |
| 24 | Lagos | Bomb explosion, collapsed buildings, erosion, flooding, plane crash | Flooding is an annual event, armed banditry, communal clashes are very frequent and common place in the area |
| 25 | Nasarawa | Communal clashes & bush fires | Ethnic clashes is the major problem in the area |
| 26 | Niger | Rainstorm, flooding | Flooding is common place in the area |
| 27 | Ogun | Flooding, ethnic clashes, plane crash | Flooding is common place in the area |
| 28 | Ondo | Rainstorm, erosion & communal clashes | Flooding is common place in the area |
| 29 | Osun | Rainstorm, communal clashes | Communal clashes are all too frequent |
| 30 | Oyo | Flooding, rainstorm, erosion | Rainstorm & flooding |
| 31 | Plateau | Communal clash, bush fire, erosion | Communal clashes & rainstorm |
| 32 | Rivers | Erosion, communal clash & oil pollution, flooding & plane crash | Youth restiveness and oil pollution are the main crises and are all too frequent |
| 33 | Sokoto | Flood, quella birds, fire and flood and windstorm | Windstorm, drought |
| 34 | Taraba | Ethno-communal clashes and bushfires | Communal clashes are very frequent |
| 35 | Yobe | Fire, drought, fire and flood | Drought is common |
| 36 | Zamfara | Flooding, religious crises | Occasional flooding is not uncommon |
| 37 | FCT | Windstorm, fire, flooding | Market fires are frequent |



Figure 4: Floating houses in Bayelsa, Nigeria
(Source- PM News)

Food supply

Food is the most basic requirement of life. It is sine-qua-non for healthy living and human survival and sustenance. Most of the developing countries like Nigeria still contend with the persistent problem of food security.¹⁶ Factors contributing to food problems in Nigeria vary from man-made problems to natural forces.¹⁷

Disaster may disrupt food supply, leading to food shortages and specific micronutrient deficiencies. It could provoke severe nutritional consequences including famine and starvation.⁴ Also, inadequacy of food and nutrition exposes the population to malnutrition, particularly the vulnerable groups such as children and the elderly.¹⁴

Water and sanitation

Adequate supply of "clean" water is one of the most basic human needs. Water and sanitation remain the major primary drivers of public health and one of the fundamental problems affecting millions of Nigerians. Disaster can cause serious damage to water supplies and sewage systems. Such effects could be devastating especially in Nigeria with already poor indices in terms of access to improved drinking water source and improved sanitation (Table I).

Drought is an insidious hazard of nature that originates from a deficiency of precipitation over a long extended period of time, which results in water shortage in the environment major environmental problem in some part of Nigeria.¹⁸

Poor sanitation and the disruption of vector control activities may increase the incidence of endemic vector-borne disease.¹⁴ Malaria is the predominant disease affecting the population of Nigeria. Many other diseases endemic throughout the country are generally associated with unsatisfactory drinking water supply, poor

sanitation conditions and inadequate health education programs. These include diarrhoea, dysentery, gastro – enteritis, infectious hepatitis, hook worm, guinea worm, scabies and other parasitic infections.

Damage to social infrastructures and population displacement

The 2012 floods in Nigeria were a wakeup call which clearly demonstrated the risk to human security that a natural disaster can pose. Disaster can cause serious damage to health facilities, among others. This can severely limit health systems' provision of routine health services and preventive activities to the population in the time of the greatest immediate need. Structural damage to facilities poses a risk for both health care workers and the patients.

Limited road access makes it at least difficult for disaster victims to reach health care centre.¹⁹ Also, the supply chain (medical equipment and pharmaceuticals) for the health facilities is often temporarily disrupted, consequently leading long term increase in morbidity and mortality.^{14, 20} Over 2.3 million people were displaced from their homes. Three hundred and sixty three people lost their lives in the floods. Another 16 million people, in 108 local governments, were negatively affected. It is estimated that the total losses from the flood were 2.6 trillion Naira or \$16.9 billion.²¹

Disaster could lead to spontaneous or organized movement of people, which can lead to precipitation of epidemic of communicable diseases in both displaced and host communities. Crowding of population and overlay of refugee and host population may lead to injuries, violence and deaths. Mass migration can introduce new diseases into the host community with increase in morbidity and mortality.¹⁴



Figure 5: Flooding photos taken at Wadata in Makurdi Benue state, Nigeria
(source- Photo News)



Figure 6: Protesters in Kano, Nigeria during April 2011 post-election violence
(source-Human Right Watch)



Figure 7: UN office bombed in Abuja, Nigeria
(source- Photo News 3)



Figure 8: Remains of Dana MD 83 aircraft that crashed @ Lagos, June 3, 2012
(source-Photo New)



Figure 9: Remains of collapsed building
(source-Leadership newspaper)

Morbidity and mortality

The physical impacts of a disaster are the deaths and injuries. The amount of deaths can lead to a reduction in the population, and thus the workforce, which will in turn have an impact on the socio economic sector of the community. Both human and animals are affected by disasters. In 2012 flood: 25 million Nigerians were in danger, 38,228 displaced, 363 lost their lives, 56 communities washed away^{21,22} and other casualties in previous disasters are summarized in Tables II & III.

Mental health

The health effects of natural disasters are not purely of a physical nature. Just like the physical effects, the emotional effects of disasters vary from disaster to disaster. Generally, natural disasters result in large numbers of individuals suffering from minor emotional distress that tends to be self-limiting in nature.¹¹ Some portion of the population may suffer from more severe forms of distress, especially anxiety and depression, depending on their prior psychological state and the impact of the disaster on them and their families.²³ It could lead to post-traumatic stress disorder (PSTD) at epidemic level.

Climatic exposure and shelter

Climatic exposure because of rain or cold weather puts a particular strain on the health system. Extreme hypothermia is only one potential acute health problem associated with extreme cold weather.¹³

Outbreaks of communicable diseases

While natural disasters do not always lead to massive infectious disease outbreaks, they do increase the risk of disease transmission. The disruption of sanitation services and public health programmes

combined with the population density and displacement, all culminate in an increased risk for disease outbreak.²⁰ While it is true that the potential for outbreaks and even epidemics of infectious disease exist after any natural disaster, the actual occurrence of such outbreak has been rare.^{4,24}

Zoonotic diseases can increase during disasters because the normal protective measures are absent. A common example in developing countries is rabies, spread by dog bites. . Animal carcasses are a very common source of water contamination after disasters, and a viable plan to minimize animal deaths during a disaster will greatly reduce human infections during the recovery period.

ISSUES IN DISASTER MANAGEMENT IN NIGERIA

Some of these issues include:

1. **Poor interdisciplinary approach:** It is often not looked as collective efforts. NEMA is saddled with the responsibility of effective coordination during response but in Nigeria, we are still far from or not close to the ideal.
2. **Insufficient and poor information dissemination:** All the relevant stakeholders in disaster response and management such as security agencies, fire fighters, Nigeria Civil Defence Corps, medical personnel, Police, Red Cross, Military, among others hardly know their correct roles. In most cases, these first responders do not know their roles clearly in an event of a disaster.
3. **Poverty:** Poverty is an important factor which increases people's vulnerability to disaster. Example is the recent flood disaster in many parts of Nigeria, where people could not leave their houses despite early warning by the relevant agencies.¹⁶ This underscores and makes the issue

of relocation to a safe place a difficult matter.

4. Poor scene organization: In addition, search and rescue operations in Nigeria have always been characterized by overcrowding, confusion and chaos environment. Some experts described it as 'search and recovery of dead bodies' because the response are usually poor, slow, uncoordinated and ineffective.⁶ Lack of modern navigation gadgets including use of global positioning system (GPS), lack of total radar coverage, poor logistics and communication are some of the causes.

5. Other issues include lack of adequate staff and disaster managers, poor funding, problems of procurement and logistics, inefficient utilization of resources and corruption. The effects of these include poor skill in disaster management, poorly coordinated operations, absence of necessary tools to work with, among others.⁶

6. Public and community education on disaster. This has an inverse relationship with the impact of a disaster in a community, i.e. the more a community is educated on disaster management the less the impact of a disaster will be in that community.²

CONCLUSION

Both natural and man-made disasters are of public health importance in Nigeria and their management has been very ineffective in terms of disaster preparedness and search and rescue operations. Nigeria, with already fragile socio-demographic statistics, whenever, disaster strikes, the effects are usually catastrophic.

RECOMMENDATIONS

In view of the numerous problems associated with disasters in Nigeria, the following recommendations are made.

1. Proper funding of relevant agencies that play role in disaster management by the 3-tier of government (federal, state and local government level).
2. Development and public sensitization of early warning signs by the relevant agencies.
3. Introduction of Public and Community education into the school curricula.
4. Reduction of poverty in the country through empowering of the people
5. Capacity building of staff of all relevant stakeholders that are important in disaster management.
6. Use of modern gadgets such as GPS, geographic information system (GIS) important for prompt and effective search and rescue operations in accordance with best international practices.
7. Tackling issue of corruption (both financial and non-financial).
8. Taking issues of air safety very serious by both government regulatory agencies and the airline managers.

REFERENCES

1. World Health Organisation (WHO). Coping with emergencies: WHO strategies and approaches to humanitarian actions, 1995, Geneva. www.who.int (assessed 10th November, 2012).
2. UNDP/UNDRO (1992). An overview of disaster management. UNDP/UNDRO Disaster Management training manual, 2nd edition.

3. Internship Series (2007). Understanding Disasters, volume 3, p5.
4. Noji , E (1997). Public health consequence of disasters. New York, Oxford Press.
5. World Health Statistics (WHS), 2011. www.who.int. (assessed i0 November, 2012).
6. Isioma M (24Th June, 2012). Disasters: questionable emergency response. National Mirror Newspaper.
7. Olorunfemi,FB and Raheem, UA: Sustainable Disaster Risk Reduction in Nigeria: Lessons for Developing Countries.
8. Orebiji A (2002). Nigerian Red Cross Society: 2001 Central Council Report by Nigerian Red Cross Society, Lagos.
9. Babanyara, YY, Usman HA, Saleh UF (2010). An Overview of Urban Poverty and Environmental Problems in Nigeria, Journal of Human Ecology, 31 (2): 135 – 143.
10. United Nations Development Programme UNDP 2008. Human Development Report 2007/2008: Country Fact Sheets: Nigeria. New York: United Nations.
11. International Monetary Fund (IMF) 2007. NigeriaPoverty Reduction Strategy. Paper Progress Report.IMF Country Report, August.
12. Department for International Development DFID 2004 Country Assistance Plan for Nigeria, 2004-2008London: DFID.
13. National Population Commission Report, 2006 Census. Nigeria.
14. Public Health Guide in Emergencies (PHG). 2nd edition, 2008. The Johns Hopkins and the International Federation of Red Cross and Red Crescent societies.
15. PAHO, 2000.Natural disasters: protecting the public's health, Washington DC.
16. Bolarin, O.T. And Adetokunbo, A.G (2007). Ibadan, Nigeria Journal of Central European Agriculture Vol 8 No.3 (397 - 406).
17. Bashir, W (1986). Food Crises and Government Response in Nigeria: Critique of the River Basin Development Authority. Boston: Africa Studies Center.
18. Okorie, FC (2003). Studies on Drought in the Sub-Saharan Region of Nigeria Using Satellite Remote Sensing and Precipitation Data. Unpublished Working paper. University of Lagos.
19. Cole S (1995). Lifelines and livelihood: A social Accounting Matrix approach to calamity preparedness, Journal of Contingencies and Crisis Management, 3 (4): 228-246.
20. Kimberley IS and Steven JR (Spring 2000). Public health impact of disasters. Australian Journal of Emergency management. 58-63.
21. 2012 Flood Report (May 2013). Building a Coordinated Approach to Flood Disasters in Nigeria” Centre for Human Security of the Olusegun Obasanjo Presidential Library Foundation.
22. Oluwole I., Tunde O., Adamu A., Jude O., Yekini J and Alphonsus A. (20th September, 2012). Flood disaster: 25 million Nigerians in danger, 38,228 displaced, 56 communities sacked, Nigerian Tribune Newspaper.

23. Siegel JM (1999). Emotional injury and Northridge, California earthquake. Unpublished Manuscript.
24. Management of dead bodies after disasters (MODB, 2006): A field manual for first Responders, [www.paho.org/english/dd/ped/deadbodiesFieldManual,htm](http://www.paho.org/english/dd/ped/deadbodiesFieldManual.htm) (assessed 10 Nov 2012).