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Challenges of Climate Change and Implications for the Nigerian Child

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Abstract

Climate change is an adverse environmental phenomenon occurring at rates projected to be unprecedented in recent human history. Climate change could result in social, economic and environmental crises affecting the younger population. Nigeria is a country of the young with 46% of its population under the age of 15 and these represent the largest group currently affected by climate change. Children are more vulnerable to the harmful effects of climate change. Drought and flooding resulting from extreme climate change negatively impact food production affecting children in the form of hunger and malnutrition. Children face greater risks of contracting vector-borne diseases from under nutrition and diarrheal diseases. When temperature rises, causing water scarcity and air pollution, children suffer deadly respiratory and waterborne diseases. Family migration and displacements as a result of climate change disrupt developmental activities of young children. Displaced families usually end up living in internally displaced centers. These centers usually have poor infrastructure and substandard housing conditions depriving families' access to healthcare. The consequences associated with climate variability includes malnutrition, loss of shelter, poor educational development, child labor and inadequate access to healthcare. There is an increasing need for national and international organization to consciously intensify efforts on strategies for mitigating the effect of climate change. Disasters associated with climate change are inevitable occurrence in our present world hence the need for emergency preparedness, designing ways that children and families can be educated on simple and practical actions that can protect life and personal property in the event of natural disaster. Climate change education should be provided in schools by the authorities and relevant institutions on raising awareness and training.

Keywords: **Climate change, migration, malnutrition, shelter, child labor**

Introduction

Over the years, human beings have relied on the environment for existence and sustenance in a way that survival is determined by interaction with the environment, in the form of social and economic activities. From the antenatal stage onwards, humans are exposed to constant environmental threats to health and wellbeing. These threats exist in all industrialized and developing countries 2009). Children in developing countries are in the frontline of environmental threats, poverty, pollution, resource degradation, unsafe environments in many ways like; increased incidences of diseases, hunger, malnutrition and degradation of the environment which have health implication (Jahan & Rahman, 2018). These challenges are constantly aggravated by climate change.

Climatic changes refer to climate variability taking place around the globe or the year-to-year variations of atmospheric conditions around a mean state or a measure of the frequency distribution of the value of climate variables and their range over a given period (Bartlet, 2008). Climate change can directly affect the health of a child through extreme weather events such as heat waves and extreme cold. It can also indirectly affect a child through food

shortages causing malnutrition. Climate change can also lead to the spread of infectious disease, food- and water-borne illness like typhoid fever and cholera; increased air pollution and higher temperatures which poses severe effect on the survival of a Nigerian child. Changes in climate for example, temperature, rain, flood, drought and sunshine can permanently damage nutrients in different food resource bases on which children and even adult depend, to the extent of causing ill-health conditions that may result from under-nutrition. This could lead to unplanned migration (Onu, Okwori & Onagwa, 2017).

A distinct consequence of climate change is displacement and migration of families. In developing countries, children may be pulled out of school and put to work to help families recover in the aftermath of environmental disasters caused by climate change. Child labour jeopardizes a child's total development and deprives childhood (Myers, 2017). Developing countries like Nepal and Haiti were recently rocked by various degrees of earthquakes triggered by rapid climate change resulting in children being killed in collapsed buildings, displaced and exposed to unplanned migration (Fothergill and Squier, 2015; Melissen, 2010). These according to Myers (2017) often increase the possibility of child abuse and trafficking.

Nigeria is experiencing increasing risk from climate change. This risk includes rising temperatures, heat waves, floods arising from excess rainfalls, inadequate rainfall, sea level rise, increase in likelihoods of conflict, induced environmental and vector-borne diseases (Ebele and Emodi, 2016). In 2012, Nigeria experienced its worst flooding in recent history, more than 2.3 million people were displaced, 363 lost their lives and another 16 million people were impacted and majority were children (Nkeki, Henah and Ojeh, 2013). This flood also led to increase in dysentery and diarrhea illness in children. Climatic change is expected to intensify these combined threats to children and is also likely to accelerate certain large-scale environmental changes, including desertification, diminishing freshwater resources and biodiversity loss, which have far reaching effects on a child's health and well-being (Fiona and Brad,2015).

Furthermore, climate variability has attracted much attention in recent times, not only because of the globally unparalleled persistence in anomalously low rain or high rainfall, but also because of the low capacity of the society and economic systems to cope with its related hazards, especially in the sub- Sahara African. As a result of this low capacity to cope, extreme climate variability which is often accompanied by drought, ecological decline, widespread food scarcity and general poverty causes a great decline in the nutrition of children (Onu *et al,* 2017).

This paper focuses on challenges and implications of climate change for the Nigerian child as regards to extreme climate conditions on children, malnutrition, loss of shelter, educational development and decreased school attendance, child labor and poor access to healthcare.

Challenges of extreme climate conditions on children

Climate change affects everyone, however certain populations go through disproportionately, one being children, particularly in developing countries like Nigeria. Nigeria is a country of the young with 46% of its population under the age of 15 (NDHS, 2013). The threat to human health is one of the most crucial risks from climate change and children being more prone to these changes. According to WHO (2017) more than eighty percentage of the contemporary health burden due to altering climate occurring in children younger than five years old. These health impacts include the large outcomes of weather disasters, exacerbated allergic and asthmatic diseases, meals and water insecurity, and heat-related deaths. Exposure to weather change influence the health of children beginning earlier than conception-reflecting parents' diets and different environmental effect (Jahan and Rahman, 2018).

Extreme climate conditions such as high wind, heavy rainfall, heat and cold can result in wide ranging scenarios such as tropical storms, floods, landslides, droughts and sea level rise (Karoly, 2010). Public

health and school infrastructure, such as community health centers, schools and laboratories, would be eroded when resources are diverted from their maintenance to disaster recovery. Communities and governments would be burdened with having to make reparations to individuals for property damage and loss, unemployment, clean-up and reduced socioeconomic viability of the communities affected. At such instances, the health of the general population, including that of the children, would be adversely affected (Onu *et al*, 2017).

Children are less able than adults to regulate their body temperature, thus, more vulnerable to changes in temperature compared to adults. Extreme temperatures have led to more heat-related illnesses and deaths among children (Bangay and Blum, 2010). Heat and cold-related morbidity and mortality rates are highest in infants and young children. Children exposed to extreme heat are to a greater extent at risk because their body temperature regulation systems are immature. Such risks are more compounded for children living with chronic health conditions and/or in substandard environment. Increasing air pollution levels resulting from wildfires, smoke and airborne dust as well as ground-level ozone, pollens and spores all pose a threat to the overall well being and development of children. The deterioration of air quality causes increase in respiratory and cardiovascular morbidity and mortality rates (Haritini, Anastasia, Pavlos and Sotiris, 2015)

According to Onu *et al,* (2017), climate change would cause a shift in the location of some vector-borne diseases, such as malaria (mosquitoes) and sleeping sickness (tsetse fly). Malaria is the foremost killer disease for children in Nigeria. Mosquitoes thrive in locations where water logging and poor drainage typify the landscape. Malaria will also increase due to the preponderance of stagnant pools of water resulting from sea level rise during flooding. Lyme disease, Hantavirus and other viruses are among the climate-related vector-borne diseases that pose a heavy health burden on children (Ramasamy & Surendran, 2011). Other direct impact of climate change on the health of children include diseases induced by increasing incidences of heat waves. This can lead to more cases of Cerebrospinal Meningitis (CSM), which today is found to correlate positively with the extremely high temperature in northern Nigeria (Lau & Weinstein, 2011). Poor air quality caused by climate change extends the warm season and lengthens pollen season. It also increases the amount of airborne pollutants in the environment. Pollutants and pollen can have chronic impact on children's respiratory health, triggering allergies and asthma (Baldacci, Maio, Cerrai, Sarno, Baïz & Simoni, 2015).

The WHO/UNICEF/UNDP/World Bank, (2010) reported that about 36% of deaths in children younger than 14 years is attributed to illnesses and conditions related to poor environment, with the largest burden being diarrhea, which kills at least 1.9 million children under five annually. Children already suffer around 90% of the global disease burden from climate change with almost all of this occurring in developing countries which are the least responsible for climate change (IPCC, 2014). Globally, for children less than 5 years of age, climate change is predicted to worsen all of the top five causes of death like neonatal deaths, acute respiratory illness, diarrhea, malaria and malnutrition (Fiona and Brad, 2015, Haritini, *et al*, 2015 and McBride, 2016).

Flood and droughts affect yield of food products resulting to food insecurity. As a result of this, household food insecurity becomes high, even amidst the poor earning power of Nigerians. Climate change alters the nutrient quality of food, these impacts could together reduce access to adequate nutrition leading to developmental delays and adverse health outcomes for children (Haritini, *et al*, 2015). According to Onu *et al,* (2017), people with good nutrition will surely enjoy good health, as good nutrition promotes healthy well being which lead to the prevention of many diseases of children during childhood

Malnutrition

Malnutrition refers to disorders resulting from inadequate diets or failure to absorb or assimilate dietary elements. Onu *et al,* (2017) has found that inadequate diet, poverty and diseases are the major causes of malnutrition in Nigeria; and hunger and malnutrition recently assumed severe state in Nigeria which has partly been as a result of climate change. Inadequate diet in children will not only cause anemia but lead to other signs of malnutrition. Malnutrition is prevalent in Nigeria where basic essential needs of food, shelter and clothing are often not within the reach of the majority poor (Ayo, 2014). Recent flood disaster in Adamawa, Taraba, Plateau, Nasarawa and Benue State destroyed thousands of hectares of farmland which led to inadequate food in homes (Ikusemoran, Anthony and Maryah, 2013), according to Ikusemoran *et al*., (2013) lack of food staples in homes is a leading cause of malnutrition in children reducing immunological capacity to fight against diseases, and recurrent infections. This leads to dismal growth of children which adversely affect child's mental and physical development and learning capacity in future life.

Water-borne diseases such as S. typhoid, Giardia, E. coli, Cryptosporidium and amoebiasis caused by unclean drinking water, heavy rains or flooding are also major sources of child morbidity and mortality. Most waterborne diseases are characterized by diarrhea, which involves excessive stooling, often resulting to dehydration and possibly death of millions of children annually. Toxic algal blooms and increased growth of pathologic Vibrio species are associated with warming seas cause by changes in the environment. Warmer seasons facilitate food contamination, increasing risk for gastrointestinal infections usually caused by a viral, bacterial, or parasitic infection causing a combination of vomiting, diarrhea, abdominal cramps, fever and poor appetite, which can lead to dehydration in children (Fiona and Brad, 2015). Despite these effects on nutrition of a child, consequences of climate change also leads to destruction of shelter.

Loss of Shelter

Shelter simply means the dwelling place of an individual, it is a building, or a covered place made to protect people from danger or bad weather and is susceptible to natural, manmade or climatic damage. In the social life of every Nigerian, possession of a home boosts one's status in the society (Nich and Obinna, 2014). Housing plays a vital role in the improvement of human health, social and economic welfare of the society. The problem of inadequate housing has been compounded by the high rate of urbanization and economic growth coupled with climate change induced disasters. Housing difficulties is more severe for low income families where housing challenges have been complicated by rapid growth, inflated real estate values, speculative activity, flow of poor immigrants and inadequate planning. The difficulty of inadequate housing is in both urban and rural areas in Nigeria. These problems have resulted in overcrowding, poor and inadequate social amenities, unsatisfactory and unwholesome environmental conditions and urban squalor, the absence of open space, the over development of land area leading to the overcrowding of buildings, in-accessibility within residential areas, and in the scarcity and high cost of building materials (Nich and Obinna, 2014).

Climate change affects global temperature and precipitation patterns. These effects, in turn, influence the intensity and, in some cases, the frequency of extreme environmental events, such as forest fires, hurricanes, heat waves, floods, droughts and storms which often destroys structures in its path. In the aftermath of disasters, children may be pulled out of school and put to work to help families recover which in turn interfere with education and health. The long-term negative effects of extended periods of labor may be irreversible for many children. Disasters have also been linked to child maltreatment through increased parental stress and decreased social supports.

Displaced poor families usually end up living on the periphery of urban areas. The locations usually have very poor infrastructure, are close to industry and toxic waste, which provide substandard housing conditions (Mbah, 2014). These climatic induced disasters pose great danger to the educational development and the survival of a Nigerian child.

Decreased School Attendance

Every child has the right to education, yet many children, particularly in developing countries, have to drop out of school because of economic and social challenges which makes it difficult for school attendance and participation. These challenges include deepening poverty, gender discrimination, emergencies and conflict situations, HIV and AIDS and disabilities (Laura, Karen & Harry, 2017). Climate change is increasingly exacerbating these challenges and impacting the ability of children to gain on education. The role of weather in determining important outcomes such as school attendance, truancy and absenteeism has been identified several decades ago for example, in some parts of the country, children living more than 2 miles (3km) from school are excused from compulsory schooling due to school access having been impeded by damaged roads and bridges, (Adejuwon & Jegede, 2011).

The problems inherent in climate variability include educational retardation, school dropout and child labor. For instance, child labor appears to be used as a buffer for short term economic shocks of the kind that follow extreme weather events, or rainfall surpluses or deficits. School enrolment may be delayed or foregone entirely as a result of drought. Children affected by the drought who become young adults, had significantly less schooling than the children in other areas not affected by the drought, (Anne and Cally, 2006).

Climate change has negative impact on education in Nigeria because adverse weather has been attributed to destroying infrastructure such as bridges, roads and schools. Classrooms destroyed by extreme weather events become unusable during the rainy season, forcing classes to be abandoned. The incidences of school dropout increase in cases where dwellings are destroyed, students cannot cross bridges to attend school and people are moved to safer areas, leading to withdrawal of children from schools. Students are often regarded as having absconded from school because of these disruptions, (Nkeki, Henah and Ojeh, 2013). The overall result is disruption of the learning process which leads to poor educational outcomes, including higher incidences of repeats and school dropouts. The disruptive weather patterns due to climate change set the Government back through rehabilitating destroyed infrastructure

In the most direct sense, extreme weather events such as tropical cyclones may destroy or damage school buildings, or schools may be used to shelter people who have been displaced from homes. This leaves children temporarily unable to attend school and some may never return to school. Agricultural households that suffer losses to income and food security caused by droughts or heat waves may not have enough money to pay school fees or may pull children out of school to help earn additional income. In addition, the entire family may migrate in search of food, water, and employment, pulling children out of school and subjecting them to child labor (Adejuwon & Jegede, 2011).

Child Labour

Myers (2017) refers to all kinds of labor which jeopardizes a child's physical, mental, education or social development and deprivation of childhood as child labor. It includes the work that is physical, mentally, socially and morally harmful and dangerous and interferes with schooling (including depriving children from attending or forcing children out of school). Children working in extremely hazardous employment conditions, such as in mineral mines or brick kilns are at risk of developing respiratory problems due to inhalation of dust and toxic gases, which can damage digestive, immune and central nervous

systems. Being killed in explosions or collapsing mine shafts is also a risk, as is illness and injury caused by carrying heavy loads for prolonged periods. Climate change is fueling this surge in child exploitation, forcing children to swap the safety of the classroom for the toxic gas of the goldmine. Drought, heavy rain and other extreme weather conditions is destroying farmlands which forces families to migrate to areas with limited access to healthcare, thus, interrupting schooling and prioritizing employment (IPCC, 2013).

Poor Access to Health Care

Climate change can also impact health care delivery and access to health facilities. Extreme weather events can disrupt infrastructure, including utilities, transportation and communication systems, critical to maintaining access to emergency services and health care. As a result of climate change, hospital supply chains may also be disrupted, leading to shortages of essential pharmaceuticals. According to Akpomuvie (2010), one of the most significant development problems in Nigeria is the lack of adequate health facilities in various parts of the country. The situation is worsening especially during disasters like floods, the available facilities are overstretched and most times many of them are not functional. Blocked roads and broken bridges make it difficult to access health care centers especially during emergencies such as floods or storms. This poses great danger on the life of children who are the most vulnerable leaving them with little or no medical care. Therefore, there are challenges for child development during adverse weather conditions precipitated by climate change.

Conclusion and Recommendations

The various phenomena associated with climate change have come to stay, understanding the challenges of climate change for the survival of the child, as well as the efforts at mitigating its various impact on the general wellbeing of the child is fundamental to overcoming some of the early childhood diseases. Based on the conclusion, therefore, it is recommended that the following recommendations be made:

1. Risk-reduction initiatives should be designed by the relevant agencies in government in such a way that families and children can be educated about simple and practical actions that can protect life and personal property in the event of natural disaster. Furthermore, government and non- governmental agencies should protect children and families who are refugees and forced to move as a result of climate change through the provision of shelter which could be temporary or permanent.
2. School authorities and community health agents should provide children with climate change education, awareness campaigns and training on climate change issues.
3. In the event of climatic change induced disasters like flood concerned institutions along with the government should be swift in creating corresponding relief materials in the form of food and drugs to make up for destroyed farmlands and prevent the spread of diseases such as diarrhea and dysentery. This will help in mitigating malnutrition among children.

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