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Assessment of the Influence of Climate Change on Nutritional and Health Status of Children in Rural Communities of Gwagwalada Area Council, Abuja

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Abstract

This study investigated household knowledge of influence of climate change on nutritional and health status of children in rural communities. The study adopted descriptive survey research design. The population consisted of one thousand and forty (1,040) households in five selected communities in Gwagwalada Area Council of the Federal Capital Territory. The sample consisted of two hundred and eight (208) households that were selected using stratified and simple random sampling techniques. A structured questionnaire titled "Household Knowledge of Climate Change (HKCC)" was used as the instrument for data collection. Data collected was imputed into the SPSS (25) software package and results were presented in tables 1-3. The study discovered that majority of households (61.4%) in rural communities do not have adequate knowledge on climate change and its influence on nutritional and health status of children. 12.7% were of the view that provision of physical and social amenities by government will go a long way in increasing the knowledge level of households, while 32% were of the view that climate change awareness campaign is a better strategy for increasing the knowledge level of households, 20.8% of the households favored adequate knowledge of low-cost nutritional diets and proper management of available food, 18.2% of the households reported increased financial supports for research is a better strategy. Conclusively, climate change can be ameliorated in adopting good management strategies. The study recommended that, awareness campaign by relevant agencies should be heightened, where adequate knowledge of low-cost nutritional diets and proper management of available food among household will be pursued.

Key words: Knowledge levels, Climate change, Nutritional foods, Malnutrition, rural communities

Introduction

From the earliest stages of fetal development, birth and into adulthood and old age, proper food and good nutrition are essential for survival, physical growth, mental development, and wellbeing, (World Health Organization, 2002). According to Ojo (2012), human cells are like microscopic energy making machines and need to be maintained to remain in good working order. When the human cells do not receive the correct nutritional food, these bodies suffer from nutritional disorders. According to Couillard (2018), more than 800 million people in the world still suffer from hunger and over two billion are victims of malnutrition, while 1.8 billion adults are overweight or obese. Similarly, Graziano da Silva (2018) stated that globally, and in spite of considerable progress, almost all countries continue to contend with the multiple burdens of malnutrition,

UNESCO (2011) states that more than a quarter of children below fifteen years of age in sub-Saharan Africa are underweight due to poor diet and malnutrition, making them more vulnerable to disease and less able to concentrate at school. In Nigeria, UNICEF (2015) asserted that approximately 1.7

million children suffer from severe malnutrition. This number constitutes one tenth of all severely acutely malnourished children in the world. According to the UN (2014), Nigeria has the second highest acute malnutrition burden in the world, with an estimated 3.78 million children suffering from malnutrition. These revelations implied that Nigeria households lack required knowledge about nutrients that can improve the nutritional status.

Children in Nigeria are falling short of meeting some of the daily nutritional requirements which can improve their health status (UNICEF, 2006). Generally, it is the management and optimization of nutrients that amounts to a healthy diet. In fact, there are no bad food, only badly managed diets (Ojo, 2012). The British Nutrition Foundation (2005) did a summary of nutrients traditionally considered important in certain amounts for healthy status of members of a household. For example, Zinc is found in protein rich foods, such as meat, shellfish, dairy products, bread and cereals. It helps with the production of new cells and enzymes. It helps process protein, fat and carbohydrate and with healing the wounds, however, excess zinc can lead to anemia and weaking of bones.

Iron is found in liver, meat, beans nuts, dried fruit, whole grains (brown rice) soya bean flour and dark leafy vegetables. Iron helps with the production of red blood cells that carry oxygen around the body. Human's brain and body need iron and oxygen to grow. Too little iron leads to anemia, in which case a child may not be getting enough oxygen for normal growth and development.

Sugars, such as sucrose, fructose, and maltose, are naturally found in fruit and milk, but are added to many other manufactured foods.

Carbohydrates are found in sugars and starch and are major sources of energy. Sugars can be found in whole fruits and vegetables. Starch is found in food items such as potatoes and bread. Fiber is a type of carbohydrate found in plants and is important for digestion.

Protein is essential for growth and repair of body. The main sources of protein include meat, fish, eggs, milk, cheese, cereals and cereal products (bread), nuts. Essential amino acid such as thiamin is found in pork, vegetables (especially peas), milk, cheese, fresh and dried fruit, eggs, whole grain breads and some breakfast cereals. It helps to break down and release energy from the food that we eat and also helps to maintain nerves and muscles tissue.

Furthermore, there are two categories of essential fatty acids; unsaturated fat found in only fish, avocados, nuts and seeds, sunflower and vegetable oils and saturated or trans- fat, found in meat, cheese, butter and pastry. Unsaturated fatty acids help the body to absorb vitamins and are also a source of energy. However, too much fat, particularly saturated and trans-fat, leads to weight gain and increased cholesterol in the blood that lead to heart disease.

The amount of sodium needed can easily be obtained from a healthy diet. Too much can raise blood pressure, potentially leading to heart disease and stroke.

Calcium is important for the healthy bones and teeth of individuals. The best sources of calcium are milk, dairy products and some cereals. Parents need to choose low fat milk, kefir cheese and yogurt as they provide more calcium than full fat varieties.

Vitamin A (Retinol) is important for the function of the skin and mucous membrane. It is also essential for vision and the immune system. It is related to cell differentiation and thus, is crucial for growth and development. Vitamin A is always found in liver, milk, cheese and butter and vegetables such as carrots and leafy green vegetables. Vitamin C is responsible for the formation of connective tissues in skin, cartilage and bones and thus, is part of the healing process. It is also implicated in the development of blood vessels and in neurological functions. It is mostly found in fruit and vegetables but can also be sourced in milk and liver. As with vitamin A, folate is important for normal cell division that promotes growth and development. It is also partly responsible for

the formation of blood cells. Folates are found in liver, yeast extract, orange juice and green leafy vegetables.

In many households, the major food that is consumed is carbohydrate, which is food rich in starch such as *garri, elubo, eba, fufu*, yam, cocoyam, pap. The consumption of carbohydrate rich food has direct negative influence on health status of children. Adding to the problem of poor nutrition among households is the phenomena of climate change. Climate change represents a substantial, transversal and complex additional challenge to the critical situation of food security and without urgent action, more people will be at risk of hunger and malnutrition (Graziano da Silva, 2018).

Climate change, also called global warming, refers to the rise in average surface temperatures on Earth. An overwhelming scientific consensus maintains that climate change is due primarily to the human use of fossil fuels, which releases carbon dioxide and other greenhouse gases into the air. The gases trap heat within the atmosphere, which can have a range of effects on ecosystems, including rising sea levels, severe weather events and droughts that render landscapes more susceptible to wildfires.

Graziano da Silva (2018) reveals that climate change already affects all four dimension of food security: availability of food, physical and economic access to food, utilization of food in terms of how it is used and assimilated by the human body, and stability of these three dimensions. Climate change affects agriculture and food production around the world due to the effects of high temperatures, elevated C_{O2} level, extreme events, pests and weeds and modified transpiration and precipitation regimes (FAO, 2008). Low latitude regions coupled with the above factors increase the risk of decreased crop yields. In contrast, high latitude areas are likely to experience crop yield increases.

Nigeria is one of the countries seriously affected by climate change leading to recurrent flood, partly due to deforestation and poor land management practices. Nigeria has suffered decreased crop and animals yields due to climate change and other avoidable crisis such as herdsmen and Famers conflicts (Metu, Okeyika, and Maduka, 2016). These problems are evident all across the country leading to increased food shortages among households. This study is therefore necessitated on the premise of finding out the influence of climate change on the nutritional and health status of members of households in Gwagwalada Area Council, Federal Capital Territory, Abuja.

Objectives of the Study

The specific objectives of the study is to:

1. Ascertain the knowledge levels of households on the influence of climate change on nutritional status of children in rural communities of Gwagwalada Area Council
2. Determine the knowledge levels of households on the influence of climate change on health status of children in rural communities of Gwagwalada Area Council
3. Find out solutions to the problems of climate change on nutritional and health status of children in rural communities of Gwagwalada Area Council.

Methodology

Research Design

The study adopted the descriptive survey research design. The survey research design explains the phenomenon as it is. It uses a small representative population and enquires about their knowledge, attitude and perception over a problem, upon which the result is generalized to a wider population.

Population for the Study

The population consisted of 1,040 households in five geo-political wards that were purposively selected out of all the ten geo-political wards in Gwagwalada Area Council of the Federal Capital Territory, Abuja.

Sample and Sampling Techniques
The sample consisted of 208 households in Gwagwalada metropolis, each council area was represented in the sample selection that was done using simple random sampling techniques.

Method of Data Collection
A self-structured questionnaire titled "Household Knowledge of Climate Change (HKCC)" was used as the instrument for data collection. The questionnaire elicited "high extent" and "low extent" responses.

The questionnaire was designed and self-administered by the researcher with the help of four research assistants. The researcher, with the four research assistants visited each of the households, where the questionnaire was administered. It took the researcher three (3) weeks to complete the exercise. Out of 208 questionnaires administered, 197 were returned valid, representing 95% success rate.

Data Analysis Techniques
The analyses of data collected were carried out based on the specific objectives and research questions of the study. Data collected were imputed into the SPSS (25) software package where descriptive statistics was used to collate the result. Simple percentages were used to determine the level of awareness of the respondents. The benchmark for determining the low level of awareness was set at 50% and above, while the level of awareness above 50% was deemed high level of awareness.

Results and Discussions
Table 1 reveals that 61.4% were not aware of climate change, 54.8% were not aware that decreased crop and animals' yields were partly due to climate change Majority of the household were not aware that climate change affects the quality of food that household eats (64%) , 58.4% were not aware that climate change negatively affects nutrition through its impacts on health, 60.4% were not aware that variations of temperatures and humidity have a strong effect on vector-borne diseases and contribute to under-nutrition.

Table 1: Knowledge level of households on the influence of climate change on nutritional status of children

Variables	N	High Extent	Percent	Low Extent	Percent	Total Percent
Knowledge of awareness of climate change	197	76	38.6	121	61.4	100.0
Knowledge about the effect on decreased crop and animals yield as a cause of climate change	197	89	45.2	108	54.8	100.0
Extent of awareness on the climate change effect on the quality of food that household eats	197	71	36.0	126	64.0	100.0
Extent of knowledge of the effect on nutrition and health	197	82	41.6	115	58.4	100.0
Awareness on the variations of temperatures and humidity effect on vector-borne diseases	197	78	39.6	119	60.4	100.0

Table 2 reveals that (58.4%) were not aware that climate change lead to recurrent flood that cause problems to human health, (57.9%) were not aware that that climate change damages crop yields, causing human sicknesses, 60.9% were not aware that climate change is the cause of droughts that affect human health as, 61.4% were not aware that the gases trap heats within the atmosphere have a range of effects on human health.

Table 2: Knowledge level of households on the influence of climate change on health status of children

Items	*N	High Extent	Percent	Low Extent	Percent	Total Percent
Extent that climate change lead to recurrent flood that cause problems to human health	197	82	41.6	115	58.4	100.0
Extent one is aware that climate change damages crop yields, causing human sicknesses	197	83	42.1	114	57.9	100.0
Extent that climate change is the cause of droughts that affect human health	197	77	39.1	120	60.9	100.0
Knowledge that the gases trapped within the atmosphere have a range of effects on human health status	197	76	38.6	121	61.4	100.0

Table 3 shows that 32% were of the view that citizens' climate change awareness campaign is a better strategy for increasing the knowledge level of households on the influence of climate change on nutritional and health status of children. 20.8% of the households favored adequate knowledge of low-cost nutritional diets and proper management of available food. 18.2% of the households were of the opinion that increased financial support for research is a better strategy. While 16.2% favored improvement of the quality of primary health care system, 12.7% were of the view that provision of physical and social amenities by government will go a long way in increasing the knowledge level of households on the influence of climate change on nutritional and health status of children.

Table 3: Solutions to the problems of climate change on nutritional and health status of children

Variables	Frequency	Valid Percent	Cumulative Percent
Aggressive citizens' climate change awareness campaign	63	32.0	32.0
Adequate knowledge of low-cost nutritional diets and proper management of available food	41	20.8	52.8
Increased financial supports for research	36	18.3	71.1
Improvement of the quality of primary health care system	32	16.2	87.3
Provision physical and social amenities by government	25	12.7	100.0
Total	197	100.0	

Discussion

The results in Table 1 shows that majority of households in rural communities do not have adequate knowledge of climate change and its influence on nutritional status of children. These findings were in line with the study by Graziano da Silva (2018) who reveals that climate change already affects all four dimension of food security: availability of food; physical and economic access to food; utilization of food in terms of how it is used and assimilated by the human body; and stability of these three dimensions. These problems are evident all across the country leading to increased food shortages among household. The fact that in many households, the major food that is consume

is carbohydrate, which is food rich in starch such as; *garri, elubo, eba, fufu*, yam, cocoyam, pap among others, this does not make many families to understand that climate change has significant influence on the quality of food they consume.

The findings in Table 2 reveals that majority of households in rural communities do not have adequate knowledge of climate change and its influence on health status of children. Study by Food and Agriculture Organization (2008) revealed that climate change affects agriculture and food production around the world due to the effects of high temperatures, elevated CO2 level, extreme events, modified pests and weeds, and modified transpiration and precipitation regimes. The consumption of low-quality agricultural produce has significant negative effects on human health, causing sicknesses and in extreme case, death due to food poisoning.

The findings in Table 3 shows that majority of the households were of the view that aggressive citizens' climate change awareness campaign is a better solution for increasing the knowledge level of households on the influence of climate change on nutritional and health status of children. The households also favored adequate knowledge of low-cost nutritional diets and proper management of available food, among others. This finding agreed with Ojo (2012) that it is the management and optimization of nutrients that amounts to a healthy diet. In fact, there are no bad food, only badly managed diets. It also agreed with Graziano da Silva (2018) that a better understanding of the pathways linking climate change and nutrition is critical for developing interventions that ensures that the world's population has access to not only sufficient, but also safe and nutritious food.

Conclusion and Recommendations

It has been established from the findings of the study that in Nigeria, a large number of households in rural communities are not aware of climate change, especially as it affects crop yield and animal production. Therefore, household knowledge level of influence of climate change on nutritional and health status of children in rural communities is very low in Nigeria.

Based on the findings of the study, the following were recommended:

1. To increase the knowledge level of households on the influence of climate change on nutritional status of children in rural communities, government at relevant ministries, parastatals, agencies and Non-governmental organizations should sensitize the households in rural communities on adequate knowledge of low-cost nutritional diets and proper management of available food.
2. To increase the knowledge level of households on the influence of climate change on health status of children in rural communities, government at all levels, health practitioners, including the private donors and philanthropists should improve the quality of primary health care system in the country.
3. The Federal government in particular should increase financial supports for research on improved agricultural seeds and high breed farm animals that could withstand any climate change. This could accelerate increased crop and animals' yields under any climatic condition and contribute to good nutrition and health.

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