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Knowledge, Attitude and Coping Strategies to Climate Change at the Household Level in Makurdi Metropolis of Benue State

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Abstract

This study examines the knowledge, attitude and coping strategies to climate change at the household level in Makurdi Metropolis of Benue State. Three (3) research questions were raised and analyzed. Survey research was adopted for the study. The population of the study comprised four hundred and fifty (450) residents of both rural and urban households aged 18 years and above. A sample size of two hundred and fifty (250) respondents was selected from the population Multi-stage and stratified proportionate sample techniques were used to select four counsel wards from the study area. the instrument used for data collection was a structured questionnaire with a total of 29 items titled, ''Climate Change Knowledge and Attitude Questionnaire'', (CCKAQ). Data collected were analyzed using descriptive statistics. The result showed household knowledge of climate change on disasters such as flood, drought and water challenges experienced by households with a mean score of 3.79, the findings on the effects identified poor periodic environmental sanitation, open defecation and poor households waste management practice with mean values ranging from 4.01 and 4.00 respectively. Households planting of economic tress (4.06), appropriate households waste management and disposal (4.02), developing right attitude towards natural resources such as Land, trees, air and water (3.97), these were identified as major coping strategies for climate change. it was concluded that households in Makurdi needs effective information on climate change, improvement in attitude as regards to practices that mitigate against climate change challenges. thus, it was recommended that household waste management and disposal should be improved within the community, causes and consequences of climate change should be intensified by local media, farmers should adopt good agricultural practices, planting of economic trees and conservation of natural resources should be improved by households, knowledge and understanding of climate change should be taught at all the educational levels.

Key words: Climate change, global warming, Attitude, Knowledge, Extreme Weather

Introduction

Human survival overtime has been dependent on favorable climate and environmental conditions. Climate change describes a change in the average conditions usually projected by man, for example changes in temperature and rainfall have been seasonally predicted. According to US Geological Survey (2019), climate change is the global phenomenon of climate transformation characterized by the changes in the usual climate of the planet that are especially caused by human activities over a long period of time. This implies that as a result of imbalance of the weather, the sustainability of the planet's ecosystem is under threat. Climate change is a broad range of global phenomena that includes global warming that increases temperature, precipitation, thereby causing environmental changes.

Recently, there have been cases of climate change on agricultural activities leading to hunger and poverty; this has brought families to the verge of hunger and food insecurity. According to Ariahu (2015), hidden hunger is responsible for most of the excessive mortality and ill- health affecting families in developing countries. Food security is the adequate production, post- harvest production, conservation, processing, storage, distribution and consumption of food by a given population. The increased intensity of drought witnessed by farming communities in Benue State threatens the food supply especially as the state is known as the food basket of the Nation. These extreme weather events of drought put pressure on the nation's economy and have adverse effect on families. Many families are at risk as a result of food shortage that may lead to malnutrition; the most vulnerable group to climate change effects are farmers, fishermen, herdsmen, children and women.

UNICEF global, regional and country assessment of children malnutrition reported that 32% of children are malnourished. The number of households affected by climate change in Makurdi metropolis may be doubled as households experience more drought caused by climate change that leads to hunger. United Nations, (2015) reported that between 2030 and 2050 climate change is expected to affect over 250,000 people each year leading to mal-nutrition, malaria, diarrhea and heat stress while continuing to jeopardize clean water, air and food supply. The prerequisite of reducing the devastating effect of climate change at households' level needs certain level of knowledge, right attitude and adopting good coping strategies to militate against its effect.

In the rural traditional farming communities in Benue state, households seem not to be aware of the reality of climate change and its devastating effects on the ecosystem. People generally attribute the effects to an act of gods or God's punishment for sins committed as the reason for crop failure. There are some that think the effects of climate is due to over population, while others linked it to the fact that the land/soil is aging and shrinking, therefore, causing poor yields. These unscientific assumptions cause people to engage in attitudes that escalate the harmful effects of climate change such as deforestation, bush burning, poor waste disposal and the use of fossil fuels. There is no defined or coordinated strategy through attitude change for mitigating the effects of climate change in communities other than religious rites aimed at appeasing God/god's anger against sin.

The researcher undertook the study to identify knowledge, attitude and coping strategies to climate change at the household levels in Makurdi metropolis of Benue state. Thus, the study was guided with the following objectives.

Objectives of the Study

1. Identify household's knowledge of climate change in Makurdi metropolis of Benue State.
2. Determine the attitude that translate into actions of households to climate change effects in Makurdi metropolis of Benue State.
3. Identify the coping strategies for climate change challenges in Makurdi metropolis of Benue State.

Methodology

Research Design

The study adopted the descriptive survey research design, involving description of climate conditions as experienced by household in Makurdi metropolis. The design was considered suitable for the study because it elicited information from a large number of households with the objective of knowing the knowledge, attitude and copying strategies adopted by families to climate change. It is expected that whatever findings that is derived from a representative sample will be generalizable to an entire population.

Population of the Study

The population comprised of households' resident in Makurdi metropolis. The target population are farmers, (both crop and animal husbandry) and traders. The target population of the study comprised of four

hundred and fifty (450) households in Fidii 1 & 11, North bank, and Wailomoyo. The population was collated from the list of Landlords association residing within these areas who are

Sampling

The researchers adopted the proportionate sampling technique to select households from four council wards in Makurdi including Wailomoyo, North bank, and Fidii 1 & 11 area. Simple random sampling technique was used to select two hundred and fifty (250) respondents which constituted the sample size. Respondents were selected from each of the areas that are farmers and/or traders who are mostly affected by climate change conditions.

Instrument for Data Collection

The instrument used for data collection was a questionnaire titled, ''Climate Change Knowledge and Attitude Questionnaire'', (CCKAQ). The instrument contains twenty-nine (29) items questionnaire on a five (5) Likert scale of Strongly Disagree (SD-1), Disagree (D-2), Mildly Agree (MA-3), Agree (A-4), Strongly Agree (SA-5).

Data Analysis

Data from the study were analyzed using descriptive statistics of percentages, mean and standard deviation. A mean score of 3.00 was used as the benchmark, therefore, any mean that measures from 3. 00 and above was considered as excellent knowledge while, a mean of below 3.00 was seen as poor knowledge. For tables 1 and 2, any mean above 3.00 was accepted, while any mean below 3.00 was rejected. The instrument used was subjected to face and content validation by two (2) lecturers, one from the Geography Department, Benue state University and the other from the department of Home Science and Management, Federal University of Agriculture, Makurdi. It was adjudged suitable and appropriate for administration after amendments on some the construct.

Results and Discussions

The result is presented on tables 1-3, based on the objectives of the study.

Table 1: The result shows that respondents agreed that climate change increases the frequency and magnitude of disasters such as flood, drought, and water stress with mean value of 3.79, followed by drought and flooding which can lead to poor yield and poverty, increases inequality among households with mean value of 3.71 and 3.35 respectively. Climate change education and awareness are given adequate attention in Makurdi had the least mean value of 0.96

Table 1: Mean, Rating and Standard Deviation of Respondents on the Household knowledge on Climate Changes in Makurdi

S/N	Item	SD	D	MA	A	SA	X	SD	REMARK
1	High temperature experienced by members of the household is a sign of climate change. Makurdi can be unbearably hot during the months of February to May before the rains set in.	14	16	22	80	118	4.09	1.15	Excellent knowledge
2	Climate change education and awareness are given adequate attention by households in Makurdi.	80	120	28	15	7	2.00	0.96	Poor knowledge
3	Impact of climate change is hazardous to health.	90	80	42	20	18	2.18	1.21	Poor knowledge
4	Causes of climate change are known by households in Makurdi	67	74	80	21	8	2.32	1.06	Poor knowledge
5	Extreme climate change such as drought and flooding can lead to poor yield	36	41	33	80	60	3.35	1.38	Excellent knowledge
6	Climate change disproportionately affects the poor leading to greater inequality	25	27	23	95	80	3.71	1.29	Excellent Knowledge
7	Climate change increases disaster such as flood, drought, and water stress.	20	27	19	104	80	3.79	1.23	Excellent knowledge
8	Households are aware of measures for adaption and mitigation of climate change	92	80	29	28	21	2.22	1.28	Poor knowledge
9	Climate is a well-known phenomenon among households in Makurdi	88	79	32	29	22	2.27	1.29	Poor knowledge

Strongly Disagree (SD-1), Disagree(D-2), Mildly Agree (MA-3), Agree (A-4), Strongly Agree (SA-5).

Table 2: shows attitude of households to climate change effects in Makurdi Metropolis of Benue State. The respondents view on this showed that households need intensified efforts on periodic environmental sanitation, open defecation and poor households waste management were practiced, farmers use of chemicals such as herbicides, pesticides and fertilizers had a mean score of 4.01, 4.00 and 3.97 respectively. Families in Makurdi Metropolis in Benue State adopt afforestation to mitigate the effect of climate change had the lowest mean value of 2.10.

Table 2: Mean, Rating and Standard Deviation of Respondents on the Attitude of Households to Climate Change Effects in Makurdi Metropolis

S/N	Item	SD	D	MA	A	SA	X	SD	R
1	Households in Makurdi distrust various sources of information about health problems relating to climate change	24	41	26	79	80	3.60	1.34	Accepted
2	Open defecation and poor household waste management are practiced by households.	12	13	41	80	104	4.00	1.11	Accepted
3	Families in Makurdi adopt afforestation to mitigate the effects of climate change.	98	80	34	26	12	2.10	1.17	Rejected
4	Household use of charcoal, firewood, gas and kerosene affects climate.	23	47	80	64	36	3.17	1.17	Rejected
5	Limited resources of household lead to poor response to climate change challenges	27	23	25	80	95	3.77	1.33	Accepted
6	Illiteracy and gender discrimination among households are barriers to response of effect of climate change.	35	38	22	75	80	3.51	1.43	Accepted
7	Farmer's use of chemicals such as herbicides, pesticides and fertilizers promote climate change.	11	27	26	80	106	3.97	1.17	Accepted
8	Households intensify periodic environmental sanitation.	14	6	23	97	100	4.01	1.12	Accepted
9	Dry season irrigation farming is encouraged among farmers to reduce flood	40	87	80	30	13	2.56	1.06	Rejected
10	Farmers practice of open grazing and overgrazing promotes climate change.	16	20	35	80	99	3.90	1.20	Accepted
11	Households makes effort to conserve natural resources such as water and air	100	80	20	30	20	2.16	1.29	Rejected

Strongly Disagree (SD-1), Disagree(D-2), Mildly Agree (MA-3), Agree (A-4), Strongly Agree (SA-5).

Table 3 shows results that households planting of economic trees to avoid deforestation , information through media enlightens household on climate change, farmers use of improved agricultural practices, intensified efforts by households in building toilets, appropriate management of waste disposal, right attitude towards natural resources such as land, water, tress and air are measures adopted to combat food insecurity as agreed by households to combat climate change challenges in Makurdi Metropolis in Benue State.

Table 3: **Mean, Rating and Standard Deviation of Respondents on the coping strategies to climate changes challenges among households**

S/N	Item	SD	D	MA	A	SA	X	SD	R
1	Households plant economic trees to avoid deforestation	8	19	33	80	110	4.06	1.08	Accepted
2	Information through media enlightens households on effect of climate change (weather forecast)	11	20	30	111	78	3.57	1.15	Accepted
3	Farmers use improved agricultural practices such as dry season irrigation system to reduce flooding and drought	15	20	50	85	80	3.78	1.16	Accepted
4	Household in Makurdi build toilets and avoid open defecation	10	15	40	105	80	3.92	1.04	Accepted
5	Appropriate household waste management and disposal practices to reduce refuse dumps	5	10	50	95	90	4.02	0.95	Accepted
6	Households to develop right attitude towards natural resources such as land, trees, water and air.	8		55	80	95	3.97	1.04	Accepted
7	Houses to be well ventilated to ameliorate the hot weather.	10	12	50	80	90	3.88	1.11	Accepted
8	Community effort to intensify information (awareness) on causes and effects of climate change	10	20	40	90	100	4.04	1.04	Accepted
9	Households to adapt measures such as irrigation farming, improved processing methods, good storage system, to combat food insecurity caused by extreme weather condition	10	10	30	100	90	3.96	1.08	Accepted

Strongly Disagree (SD-1), Disagree(D-2), Mildly Agree (MA-3), Agree (A-4), Strongly Agree (SA-5).

Discussion of findings

From the findings on table one, the result shows that respondents agreed that climate change increases the frequency and magnitude of disasters such as flood, drought, and water stress with mean value of 3.79, followed by drought and flooding which can lead to poor yield and poverty, increases inequality among households with mean value of 3.71 and 3.35 respectively. The result agreed with findings of Hamid, Usman, Elaigwu, & Zubair (2019), that individuals distrust various sources of information about health problems relating to climate change which is caused by high temperature, change in rainfall pattern, changes in distribution of weather events such as drought, storms ,floods and heat waves which possess major threats to families, causing food insecurity that may lead to other households challenges. Magami, Yahaya & Kasim (2014) revealed that climate change resulting from global warming is attributed to anthropogenic influences, one of which is flooding. Flooding is a major crisis that occurs every year in Nigeria especially during the raining season. Every year households seem not to be educated on the weather changes and its' consequences or seem not to bother with the information received on the impending flooding that comes as a warning from the meteorological agency in Nigeria. Although flooding is a natural phenomenon caused by antecedents such as melting of icebergs, hurricanes, overfilling of the major rivers, many flooding is caused by human factors such as dam failure, ignorance of warnings from the meteorological agency and coastal storms. Many of these can be avoided with adequate information and education.

Igbal & Bayzidar (2016) noted that media can play an important role in educating households on the effect and consequences of climate changes. Knowledge is basic for human survival as many individuals need adequate understanding on the appropriate measures to adopt to mitigate the devastating effect of harsh weather conditions on human ecosystem on which they are depended. Climate change which is referred to any significant long-term changes in the expected patterns of the average weather over a period of time needs individuals to have adequate knowledge which includes its causes, consequences as they transact on daily human activities such as land use, air and water pollutions.

Water stress is primarily caused by water deficit such as drought or high soil salinity. Each year, water stress on arable plants in different parts of the world disrupts agriculture and food supply with the consequence leading to famine and food insecurity. The ability to withstand water stress conditions is of economic importance, (Rahman and Hasegawa, 2012). Water is essential to human survival and indeed all living matter. Water scarcity is, therefore, the lack of freshwater resources to meet the standard water demand. According to Rahman & Hasegawa (2012), water crisis is the uneven distribution of water in some wet and some dry geographic locations, plus a sharp rise in global freshwater demand. Furthermore, Magami et al (2014) reports that water stress occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its' use, which means the lack to meet human and ecological demands. With proper knowledge, attitude concerning water security will ameliorate the challenges that families may face during the period of water stress and other climate change consequences.

The findings in table 2 on attitude of households in Makurdi towards climate change effect agrees with the findings of Trenberth (2005) stated that high temperature that causes global warming is as result of human activities that affects agricultural yields. Famer's experiences drought between 2015-2020 farming session has led to serious issues on food shortage in Benue State. Nevertheless, research conducted by Hamid, Usman, Elaigwu, & Zubair (2019), noted that climate change is as a result of human activities like deforestation, poor management of waste and its disposal, increased urbanization resulting in more industrial activities (air pollution) and use of chemical in farming. The practice of bush burning is a common

scenario during the dry season, especially in the rural setting of Benue State. Bush burning is the clearing of vegetation by setting it on fire. The reason being for social, economic and agricultural reasons.

According to Rahman & Hasegawa (2012), practices that influences bush burning includes hunting of animals in the bush for commercial purposes, the need to remove excessive vegetation for farming purposes, some farmers see it as a way of disinfecting and destroying pests, disease causing organisms and weed seeds, for livestock herders, setting the bush on fire is to encourage the fresh growth of green grass for livestock. Bush burning causes air pollution, destroy insects and animal habitats, destroy water and pasture shed points. John, Dana & Serah (2013) have identified effects of these human activities and concluded that public perception is a necessary element for climate policy for there is a significant gap between public perception on climate change reality, households disagreeing or unaware that climate change is caused due to human activities needs an intensified campaign especially to farmers, fishermen, herdsmen and industrialists.

The findings on table 3 indicates the need for adequate coping strategies in line with Hamid, Usman, Elaigwu, & Zubair (2019) noted that education, age, wealth, access to services, influences the choice of coping strategies that households can adopt to combat the effect of climate change. For example, the most vulnerable group to climate change effect is mostly the developing countries who were characterized as low socio-economic and less educated societies. More strategies implementation is needed to reduce the challenges of climate change as the society continue to witness increasing human population and Urbanization.

The coping strategies includes planting of economic trees, improved agricultural practices, appropriate management of household waste and disposal. These coping strategies agrees with Ajayi (2019), who revealed that the exact impact of climate change is still highly uncertain and likely to vary significantly across various regions. Climate smart agriculture (CSA) according to World Bank, 2018) is an integrated approach to managing landscapes, cropland, livestock, forests and fisheries that address the interlinked challenges of food security and climate change. It helps to produce crops that are resistance to extreme weather conditions and grow in the face of long-term stress conditions such as drought.

Conclusion and Recommendation

Adequate knowledge and right attitude towards climate change are essential for family survival, food security and sustainability. Climate change requires households to understand and gain knowledge on the causes and effects of climate change on ecosystem. Current attitude of households in management of natural resources such as air, water, land and waste disposal seem not to be adequate to withstand the stress of climate change. Households should desire effective ways of mitigating the effect of climate change to avoid hidden hunger and other health problems experience in recent times caused by climate change. The adaptation of adequate coping strategies and proper climate change awareness and education will reduce the challenges faced by households. In view of the findings from his research, the following recommendations were made.

1. Households can utilize the information on climate change passed by responsible agency of government such as the Meteorological Agency of Nigeria. Such information should be taken critically, and the protocols followed to avoid the consequence of climate change. The mass media is also responsible to educate and create awareness on the effects of climate change on ecosystem and on human living shelters and sustainability.
2. Households should imbibe right attitude towards the use of natural resources such as land, air and water. Plant economic trees and reforestation should replace the burning bushes and fallen trees that

have been used for fuels and other socio-economic reasons.

3. Education is key to change of attitude and the benefit of knowledge, therefore, education on climate change should be pursued at all levels in the educational sector, for the informal sector, education on climate change can be given by Home Economics extension workers and non- governmental organizations at the household levels and in places of worship and the market place.

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