



DOI: 10.5281/zenodo.13755260

Climate Change Information Awareness For Improved Healthcare Practices Among Rural Women In Kogi State

¹Dauda Bilal Arome; ²Jibrin Adamu Ishaka; ³Hope Yacim, CLN & ⁴Samuel Godwin Patrick

¹Assistant Librarian

Kogi State College of Education, Ankpa, Nigeria
bilaldauda14@gmail.com

²Librarian 3

Kogi State College of Education, Ankpa, Nigeria
ishakademus@gmail.com

³Librarian 2

Kogi State College of Education, Ankpa, Nigeria
yacimhope1@gmail.com

⁴Higher Library Officer

Kogi State College of Education, Ankpa, Nigeria
samptk84@gmail.com

ABSTRACT

The examined the climate change information awareness for improved healthcare practices among rural women in Kogi State. Four research questions guided the study. Descriptive survey research design was adopted for the study. The population of this study comprised of the entire rural women in the 21 local government area of Kogi state. The sample size for the study is 384 women which was determined using the Wimmer and Dominick sample size calculator developed by Roger D. Wimmer and Joseph R. Dominick. Data was collected through interview and analyzed qualitatively and thematically. The study showed that, the level of awareness of climate change information among rural women in Kogi State is very low as majority are not aware of climate change, and their effects on livelihood. Only few of the rural women who are educated understands what climate change is all about and are aware of climate change information. hence, education is a measure to create awareness of climate change among rural women. The major challenges affecting the awareness of climate change information for improved healthcare practices among rural women in Kogi State are limited access to information, most especially on radio, television and newspapers, lack of trust in source of information, lack of synergy in the provision of climate change information between the librarian and public health educators, lack of rural libraries/information centres, and language barriers. The study recommended that, the management of Kogi State public library board should partner with public health educators to create adequate awareness of climate change and its effects to the general public, most especially women through door-to-door campaign, market awareness campaign or use of worship places.

Keywords: Climate Change, Climate Change Information, Healthcare, Healthcare practices, Rural Women.

INTRODUCTION

The changing climate is adversely affecting livelihoods as its influence environmental issues such as increased heat, heavy sun ray, flooding, heat waves, drought, and intense precipitation which affects human health, most especially the vulnerable and marginalized communities in the rural areas. Climate change refers to changes in the mean variability properties of the climate, which persists over an extended period of time, typically within decades or longer (Ani, Anyika & Mutambara, 2022). Climate change refers to changes beyond the average atmospheric condition that are caused both by natural factors such as the orbit of the earth's revolution, volcanic activities, and crustal movements and by artificial factors such as the increase in the concentration of greenhouse gases and aerosol (Chang-Gil, 2020). The adverse outcome of climate change has necessitated global concerns and efforts at mitigating its effects as well as advocacy for measures that would restrict human actions that induce climate change.

Although long-term magnitude and patterns of climate change are uncertain, projections suggest an increase of 2°C or more in the global average temperature could be realized by the end of this century, leading to crucial changes in Earth's geosphere, biosphere, cryosphere, hydrosphere, and atmosphere, with severe implications for human and planetary health (Adebayo, Onu, Adebayo, & Anyanwu, 2012). The current impacts and future risks of climate change caused by human activities far surpass those of any other force that has transformed Earth's environment in recent history (World Meteorological Organization [WMO], 2018). Indeed, climate change will impact on health of individuals (Watts et al. 2019). Through its far reaching impact on all parts of society, climate change will challenge the very essence of human health, most especially nutrition and social wellbeing. Climate change threatens to exaggerate the vulnerabilities world populations at risk and could substantially hamper future progress and possibly even reverse the improvements made in survival and wellbeing during recent decades (World Health Organization, 2020). The main cause of the climate change experienced in the present time is the human expansion of the greenhouse effect (IPCC, 2014). Human being progressively utters the concentration of greenhouse gases and aerosols, both of which influence the climate (Enete & Onyekwu, 2015). The greenhouse gasses produce greenhouse effects and global warming that follows it. Climatic conditions such as floods, droughts, and extreme temperatures are some of the consequences of climate change. These conditions have threatened the healthcare of people in developing and developed countries, most especially women.

Healthcare includes work done in providing primary care, secondary care, and tertiary care, as well as in public health. Healthcare is the improvement of health via the prevention, diagnosis, treatment, amelioration or cure of disease, illness, injury, and other physical and mental impairments in people. The entire action, inactions, procedures, methods or ways of preventing, illness, diseases, injury both physical and mental is known as healthcare practices. According to Onu and Ikehi (2017) healthcare practices are behaviours people engage in for the sole purpose of enhancing their physical, physiological and mental wellbeing. Healthcare practices among individual can be categorized as good or bad healthcare practices. while good healthcare practices increase the healthiness of an individual, bad healthcare practices will cause illness, diseases and unhealthiness.

Climate change information are data about climate change that have been processed, organized and structured in a meaningful way to convey ideas and facts. Anunobi, and Udem, (2014) defined information as factual data, ideas, and other knowledge emanating from any society that are identified as being of value, sometimes gathered on a regular basis, organized in some fashion, transmitted to others, and used in some meaningful way. Ibrahim (2017) reported that climate change information is indispensable in this era of climate change when the climate change events such as flood, heavy sun light, heat wave among others are threats to human health and wellbeing.

Awareness is the ability to directly know and perceive, to feel, or to be cognizant of events. More broadly, it is the state of being conscious of something. Another definition describes awareness as a state wherein a subject is aware of some information when that information is directly available to bring to bear in the direction of a wide range of behavioral actions (Onu and Ikehi, 2017). Awareness is the state or ability to perceive, to feel, or to be conscious of events, objects, or sensory patterns (Sagoe, 2006). Climate

information is meant to avert (adapt or mitigate) the effects of climate change (Idoma and Mamman, 2016). Studies have established that the awareness of climate change among Nigerians is low (Akpan, Anorue, & Ukonu, 2012; Abdulkareem, Yusuf, & Oyeniran, 2012; Adeleke and Omoboyeye, 2018; Idoma and Mamman, 2020). This low awareness might be worst on the women who are more vulnerable to climate change consequences than men in the society.

Existing studies reported conflicting findings regarding the level of awareness of climate change and its impact on human health. Eneji, Onnoghen, Acha and Diwa (2020) reported that rural dwellers have average level of climate change awareness which they got from radio, newspapers, awareness campaigns, flyers, billboards, among others. In another study, Chukwuji, Tsafe, Sayudi, Yusuf and Zakariya (2019) found out that, majority of farmers in Zamfara State have high level of awareness of climate change and its impacts. Similarly, Sangotegbe, Oluwasusi and Obayomi (2019) reported high level of climate change awareness among rural women in Savannah and Forest Zones of Oyo State, Nigeria. On the contrary, Daudu, Adesiji, Matanmi, Olorunfemi, and Agbana (2014) found out that women crop farmers in Kogi State, Nigeria have low level of awareness of climate change and its impacts on their crop productivity. Similarly, Uduma, Elisha and Lawrence (2020) reported that majority of the rural women in Maiduguri metropolitan council, Borno State, Nigeria have low climate change awareness. Additionally, Bansal, Das, Joshi and Meena (2022) found out that, rural women have poor climate change knowledge and awareness. Ogunbode, Ogungbile, Asifat and Odekunle (2019) also reported that rural dwellers have poor climate change awareness. From the foregoing, there is no consensus among the existing literature, hence, additional empirical study is required to contribute to the ongoing debate.

Climate change impact and risks on agricultural livelihood affect women and men disproportionately and often to the disadvantage of women and girls (Onah, Jeyiol, Adimanyi and Ukange, 2023). Similarly, World Water Development Report (2020) suggested that, within the society and most especially the family unit, the magnitude of impact of climate change on women and girls will be significantly higher and much worse in view of the prevailing gender inequalities in the world today. Hoque, Cui, Xu, Islam, Tang and Ding (2019) reported that women are at the higher risk of climate change effects than men because the African society place them at the receiving end.

In most developing countries including Nigeria, women are highly involved with women small holder farmers constituting 70-80 percent of the agricultural labour force (CIRDDOC Nigeria, 2022), however, men are the ones that reap the proceeds. This economic disadvantage and wage discrimination make women more vulnerable to the impacts of climate change as they lack adequate resources that would help reduce their vulnerability. These factors work together to determine the expected differences in the impacts and vulnerabilities of women and men (Adzawla, Azumah, Anani, & Donkoh, 2019). Hence, these factors might be due to the fact that women have low awareness of climate change.

Existing studies reported that, climate change policies have been insufficient to sensitize people in society to the meaning and importance of the problem and in particular for mobilizing people to take action (Randall, 2019). The risk perception of the public regarding the possible consequences of climate change is of great importance. The efforts of the government and different agencies in Nigeria have been inadequate (Ifeanyi-obi and Nnadi, 2014). Idoma and Mamman (2016) reported technicality of the message, lack of trust in source of information, cultural barriers, limited access to radio, TV and internet as well as poor translation of climate change technologies as barriers to climate information communication in Agatu, Benue State.

Lack of partnership in the provision of climate change information between librarians and health educators (Speranza, Kiteme, Ambenje, Wiesman & Makali, 2010). According to Mtega and Benard (2013) the problems facing information provision in rural areas to include: poor infrastructure, impassable roads, limited access to telecommunication networks and poor electrification. Annunel, Ezeani and Okafor (2014) noted lack of proper linkage between public libraries and extension workers, lack of motivation to extension workers, high cost of information materials, lack of rural libraries/information centres, language barriers etc. The scholars however stated that in order to achieve the goal of disseminating information to rural farmers, there should be linkage between public libraries and extension

workers (Agbo, Onyebuchi & Agu, 2022). Lack of infrastructural facilities such as roads, good water supply, schools, and health centres is another challenge.

There is an urgent need to sensitize or create the needed awareness among the populace about the devastating effects of climate change (Bhardwaj and Yadav, 2015). The approaches and strategies to be adopted for this awareness creation and sensitization is dependent on the perceived susceptibility to threats and the extent of the climate change impacts on the people. This is so much so that people's adaptability has become a function of the knowledge and information at their disposal, hence the need for climate change awareness for the rural populace.

Apart from shaping climate policies, risk perception also plays a central role in adaptation and reduction initiatives (Lujala, Lein & Rod, 2014). Therefore, there is a need for more data determinants that influence people's perceptions of climate change. Agbo, Ugwuanyi, Ekere and Idoko (2022) suggested timely dissemination of climate change adaptation information to rural dwellers. Similarly, Daudu, Adesiji, Matanmi, Olorunfemi, and Agbana (2014) recommended that, future policy should focus on awareness creation on climate change through different sources such as mass media and extension, encouraging informal social net-works, facilitating the availability of credit, enhancing research on the use of new crop varieties that are more tolerant to changing climate.

In another empirical study, Chukwuji, Tsafe, Sayudi, Yusuf and Zakariya (2019) suggested that, there is urgent need for adequate and timely provision of information on climate change to the public, as this will allow people to build capacity for adaptation or mitigation of the effects of the phenomenon. Similarly, Aliyu and Sheriffdeen (2022) suggested that, there is a need for a serious campaign on the realities of climate variation, its impacts, and its serious consequences on the environment and human health. In another study, Amusa, Okoye and Enete (2018) suggested that, specific policies providing increased women access to education, land, training and other farm resources like finance would be needed to alleviate their vulnerability and gender disparity in contribution to climate adaptation decision.

Healthy healthcare practices among women is indispensable for healthy society because the overall healthcare of the family rest of the shoulder of the women who are the mothers, hence take care of the children and prepares food for the household. However, climate change is one of the biggest threats to healthy living, its impacts on human health and the natural environment are becoming more and more apparent and many countries are struggling to adapt to these changes. Studies have established that, due to the male supremacy in resource control and power in Nigeria culture, women are more vulnerable to the danger of climate change than men. This vulnerability will be further reduced through adequate awareness of information on climate change among women.

Personal observation have shown that women in Kogi State engages in unhealthy healthcare practices such as drinking rain water without proper water treatment, exposure to lots of smoke when cooking, consuming fufu dried through smoking technique, not keeping enough sleep due to business among many others which affects their wellbeing. The consequences of these unhealthy healthcare practices is that the household will spend much on drugs or even loss of lives. The prevalence of these observed unhealthy healthcare practices among women in Kogi State might be due to their inadequate awareness of information about climate change, its effects on human health and how to adapt to these environmental changes or other factors which is not certain due to lack of recent empirical study on the level of awareness of climate change information for improved women healthcare practices in Kogi State This is the gap in existing literature that the present study seeks to fill.

Purpose of the Study

The main purpose of the study is to examine the climate change information awareness for improved healthcare practices among rural women in Kogi State. The specific purposes of the study are to:

1. Examine the level of climate change information awareness among rural women in Kogi State.
2. Determine the extent to which the awareness of climate change information can facilitate improved healthcare practices among rural women in Kogi State.
3. Identify the challenges affecting the awareness of climate change information for improved healthcare practices among rural women in Kogi State.

4. Suggest strategies to enhance awareness of climate change information for improved healthcare practices among rural women in Kogi State.

Research Questions

The following research questions were formulated to guide the study:

1. What is the level of climate change information awareness among rural women in Kogi State?
2. What is the extent to which the awareness of climate change information can facilitate improved healthcare practices among rural women in Kogi State?
3. What are the challenges affecting the awareness of climate change information for improved healthcare practices among rural women in Kogi State?
4. What are the strategies to enhance awareness of climate change information for improved healthcare practices among rural women in Kogi State?

RESEARCH METHODS

The research design chosen for the study is descriptive survey research design. According to Mole (2019) descriptive survey aims at collecting data on, and describing in a systematic manner, the characteristics, features or facts about a given population. In descriptive research, data are usually collected, organised, analysed and then described as they exist (natural setting) without interfering with them. Therefore, this design was deemed most suitable for this study as the study was designed to describe systematically data and facts on climate change information awareness for improved healthcare practices among rural women in Kogi State. The study area is Kogi State, which was chosen due to high rate of climate change events in recent times in the state. The population of this study comprised of the entire rural women in the 21 local government area of Kogi state. The sample size for the study is 384 women which was determined using the Wimmer and Dominick sample size calculator developed by Roger D. Wimmer and Joseph R. Dominick. Data was collected through In-depth interview, the researchers conducted the interview using the local language of the participants. The data collected through the In-depth Interview was first translated to English, then transcribed into written form. The transcribed responses was analyzed using thematic approach in form of narration.

RESULTS

The responses collected through in-depth interview from rural women were summarized and presented based on the four research questions guiding the study. The responses were presented in narrative format supported with verbatim quotes were necessary.

Research Question 1: *What is the level of climate change information awareness among rural women in Kogi State?*

Responses collected from the women showed that majority are not aware of information resources that contains information on climate change. Majority of the women responded that they have noticed the effects of climate change such as heavy sun light which result to heat, flooding, drought, among others over the years, however, they don't know the causes of such changes and how and its effects on their health. Only few women who are educated understands what climate change is all about and are aware of climate change information.

Research Question 2: *What is the extent to which the awareness of climate change information can facilitate improved healthcare practices among rural women in Kogi State?*

Responses collected from the women showed that, majority of the women agreed that if they are aware of information about climate change and where to source them, they will understand how to cope with the changing climate and its effects on their wellbeing. Some of the women interviewed responded that climate change affected their health much because they are not aware of its effects, hence, climate change information is a remedy if proactively provided to them. One of the woman said, "climate change has reduced the food we eat as pest and diseases has increased at my farm" if I was aware of information about climate change and the proactive adaptation strategies I will not suffer such huge losses at my farm.

Research Question 3: *What are the challenges affecting the awareness of climate change information for improved healthcare practices among rural women in Kogi State?*

Responses collected from the women through interview showed that, the major challenges affecting the awareness of climate change information for improved healthcare practices among rural women in Kogi State are limited access to information, most especially on radio, television and newspapers. Lack of trust in source of information as some of the women complained that government are not truthful to them hence, they do not believe any information from government agencies. Some educated women responded that there is not synergy in the provision of climate change information between the librarian and public health educators, while other stated that, lack of rural libraries/information centres, and language barriers are another major challenges as most time rural women do not understand English language which is used to provide the climate change information on radio and television.

Research Question 4: *What are the strategies to enhance awareness of climate change information for improved healthcare practices among rural women in Kogi State?*

Responses from the interviewed women showed that the major strategies to enhance awareness of climate change information for improved healthcare practices among rural women in Kogi State are use of indigenous language to provide climate change information, proactive synergy between the librarians and public health educators, creating awareness of climate change and its effects to women, most especially the rural dwellers who are most time not exposed to climate change information. Other respondents stated that, public libraries should be more active in their provision of information on climate change and its effects on livelihood of women.

DISCUSSION OF THE FINDINGS

The findings of the study revealed that, the Level of climate change information awareness among rural women in Kogi State is very low as majority are not aware of climate change, and their effects on livelihood. Only few women who are educated understands what climate change is all about and are aware of climate change information. This is in accordance with that of Idoma and Mamman, (2020) who found out that, the level of awareness of climate change among Nigerians is low. This finding of the study is also in accordance with the earlier findings of Adeleke and Omoboyeye, (2018) who found out that majority of women are unaware of climate change and this is one of the reasons for their high vulnerability to climate change effects on their health. The finding also supports the earlier reports of Daudu, et al. (2014); Uduma, Elisha and Lawrence (2020); Bansal, et al. (2022); and Ogunbode, et al. (2019) who in their respective study found out that rural women have low level of awareness of climate change and its impacts.

The findings of the study revealed that, awareness of climate change information can facilitate improved healthcare practices among rural women in Kogi State to a very high extent. this is because the women will understand how to cope with the changing climate and its effects on their wellbeing. This implies that awareness of climate change through climate change information has the potentials to help women to adapt to the effects of climate change. This is in accordance with that of Idoma and Mamman, (2016) who found out that, awareness of climate information is meant to avert (adapt or mitigate) the effects of climate change. Similarly, the findings of this study correspond with that of Wakili, (2018) who asserted that, with right and timely climate change information the vulnerable (women) will builds the capacity to adapt or mitigate the effects of this threat to humanity, otherwise the risk of human extinction should not be wished away

The findings of the study revealed that, the major challenges affecting the awareness of climate change information for improved healthcare practices among rural women in Kogi State are limited access to information, most especially on radio, television and newspapers, lack of trust in source of information, lack of synergy in the provision of climate change information between the librarian and public health educators, lack of rural libraries/information centres, and language barriers. This is in accordance with that of Ifeanyi-obi and Nnadi, (2014) which revealed that, climate change policies have been insufficient to sensitize people in society to the meaning and importance of the problem and in particular for

mobilizing people to take action. The findings of the study also supported that of Idoma and Mamman (2016) which reported technicality of the message, lack of trust in source of information, cultural barriers, limited access to radio, TV and internet as well as poor translation of climate change technologies as barriers to climate information communication. The findings of the study also correspond with that of Speranza, Kiteme, Ambenje, Wiesman & Makali, (2010) which found out that, there is lack of partnership in the provision of climate change information between librarians and health educators.

The findings of the study revealed that, the major strategies to enhance awareness of climate change information for improved healthcare practices among rural women in Kogi State are use of indigenous language to provide climate change information, proactive synergy between the librarians and public health educators, creating awareness of climate change and its effects to women, most especially the rural dwellers who are most time not exposed to climate change information. This is in accordance with that of Bhardwaj and Yadav, (2015) who suggested that, there is an urgent need to sensitize or create the needed awareness among the populace about the devastating effects of climate change on their health, environment and agriculture. The findings also support that of Agbo, Onyebuchi & Agu, (2022) who suggested that, there should be linkage between public libraries and extension workers so as to adequately provide climate change information to rural farmers.

CONCLUSION

The examined the climate change information awareness for improved healthcare practices among rural women in Kogi State. Majority of the rural women, except the educated ones have poor awareness of climate change, and its effects on their health. When the rural women are adequately aware of climate change, especially its impacts, such awareness will improve their healthcare practices to suit the changing climatic conditions. The major challenges affecting the awareness of climate change information for improved healthcare practices among rural women in Kogi State are limited access to information, most especially on radio, television and newspapers, lack of trust in source of information, lack of synergy in the provision of climate change information between the librarian and public health educators, lack of rural libraries/information centres, and language barriers

RECOMMENDATIONS

The following recommendations were suggested:

1. The management of Kogi State public library board should partner with public health educators to create adequate awareness of climate change and its effects to the general public, most especially women through door-to-door campaign, market awareness campaign or use of worship places.
2. The state government should empower the public libraries and public health educators with adequate fund to deploy the necessary material and human resources required to effectively create the awareness of climate change and its effects to the women who are more vulnerable to climate change
3. The women should be advised to engage in healthy lifestyle, most especially practice personal and environmental hygiene so as to avoid disease and illness
4. Indigenous language should be used to provide the awareness of climate change to the women as not all the women understand English language
5. The government should use churches and Mosque as a medium to reach a wider audience on the effect of climate change.

REFERENCES

Abdulkareem, A. Y., Yusuf, M. O., & Oyeniran, S. (2012). A Survey of the Perception of Teachers and Students on Climate Change: Implication for Curriculum Development. In *Climate Change and Sustainable Development in Africa*, Edited by Oloyede I. O. Proceedings of the Second University of Cape Coast and University of Ilorin Joint International Conference. Ilorin: The Library and Publications Committee, University of Ilorin. Pp.13-30.

- Adebayo, A. A., Onu, J. I., Adebayo, E. F. and Anyanwu, S. O. (2012). Farmers' awareness, vulnerability and adaptation to climate change in Adamawa State, Nigeria. *British journal of arts and social sciences*, 9(2):104-115.
- Adeleke ML, Omoboyeje VO (2016). Effects of Climate Change on Aquaculture Production and Management in Akure Metropolis, Ondo State, Nigeria. *Nigerian Journal of Fisheries and Aquaculture*, 4 (1), 50-58.
- Adzawla, W., Azumah, S. B., Anani, P. Y., & Donkoh, S. A. (2019). Gender Perspectives of Climate Change Adaptation in Two Selected Districts of Ghana. *Heliyon*, 5, e02854. <https://doi.org/10.1016/j.heliyon.2019.e02854>
- Agbo, A. A., Onyebuchi, G. U., & Agu, B. O. (2022). Utilization of audio-visual resources for skills and knowledge of climate change adaptation among rural farmers In Nigeria. *Global Review of Library and Information Science (GRELIS)*, 18(2), 1-14.
- Agbo, A. D., Ugwuanyi, C. S., & Ekere, O. R. (2022). Sources of Library Information Needs for Climate Change Adaptation among Rural Farmers in South Eastern Nigeria. *Library Philosophy and Practice (e-journal)*. 6959. <https://digitalcommons.unl.edu/libphilprac/6959>
- Akpan, C. S., Anorue, L. I., & Ukonu, M. O. (2012). An Analysis of the Influence of the Nigerian Mass Media on Public Understanding of Climate Change. *Journal of Alternative Perspectives in the Social Sciences*, 4(4), 688-710.
- Aliyu, H. K. A. & Sheriffdeen, M. (2022). Climate risk perception among women farmers in Kwara North, Nigeria. *IOP Conf. Series: Earth and Environmental Science*, 1109. doi:10.1088/1755-1315/1109/1/012012.
- Amusa, T. A., Okoye, C. U and Enete, A. A. (2018). A Review of Economic and Food Security Implications of Critical Environmental Challenges on Nigerian Agriculture. In Okoye, C. U and Abah, D (Editors). *Dynamics of Natural Resource and Environmental Management in Nigeria: Theory, Practice, Bureaucracy and Advocacy*. 312-333. Nsukka: DEBEES Printing and Publishing Company Ltd.
- Ani, J. K., Anyika, V. O., Mutambara, E. (2022). The impact of climate change on food and human security in Nigeria. *International Journal of Climate Change Strategies and Management*, 14 (2), 148-167.
- Annune1, A.E., Ezeani, C.N., Okafor, V.N. (2014). Information sources Disseminate and utilization patterns of the Artisanal Fishery sector in Benue State, Nigeria: *Advances in Research Science domain International* 2(12), 1-12
- Anunobi, C. & Udem, O. K. (2014). Information Literacy Competencies: A Conceptual Analysis. *Journal of Applied Information Science and Technology*, 7 (2), 64-80.
- Bansal, V., Das, L., Joshi, V. & Meena, C. (2022). Awareness and Knowledge of farm women regarding climate change. *Agricultural Mechanization in Asia*, 53(7), 8637-8643.
- Chang-Gil, K. (2020). The Impact of Climate Change on the Agricultural Sector: implications of the Agro-Industry for Low Carbon, Green Growth Strategy and Roadmap for the East Asian Region. *Agricultural Economics*, 27: 51-64.
- Chukwuji, C. N., Tsafe, A. G., Sayudi, S., Yusuf, Z. & Zakariya, J. (2019). Awareness, Access and Utilization of Information on Climate Change by Farmers in Zamfara State, Nigeria. *Library Philosophy and Practice (ejournal)*.2106. <http://digitalcommons.unl.edu/libphilprac/2106>
- Daudu, A.K., Adesiji, G.B., Matanmi, B.M., Olorunfemi, O.D., & Agbana, O. (2014). Awareness of climate change and indigenous coping strategies of women crop farmers in Kogi State, Nigeria. *Journal of Tropical Agriculture, Food, Environment and Extension*, 7(1), 1-7.
- Eneji, C. V. O., Onnoghen, N. U., Acha, J. O., & Diwa, J. B. (2020). Climate change awareness, environmental education and gender role burdens among rural farmers of Northern Cross River State, Nigeria. *International Journal of Climate Change Strategies and Management*, 13 (4/5), 397-415

- Enete, A. A. & Onyekuru, A. N. (2015). Challenges of agricultural adaptation to climate change: empirical evidence from southeast Nigeria. *Tropicultura*, 29(4), 243-249.
- Hoque, M. Z., Cui, S., Xu, L., Islam, I., Tang, J., & Ding, S. (2019). Assessing Agricultural Livelihood Vulnerability to Climate Change in Coastal Bangladesh. *International Journal of Environmental Research and Public Health*, 16, Article No. 4552. <https://doi.org/10.3390/ijerph16224552>
- Idoma, K. and Mamman, M. (2016). Access and Utilization of Climate Change Information and Support Services among Vulnerable Communities in Agatu L.G.A., Benue State, Nigeria. *Federal University Gusau International Journal of Science for Global Sustainability*, 2 (2), 46-63
- Ifeanyi-obi, C. C & Nnadi, F. N. (2014). Climate change adaptation measures used by farmers in Southeast, Nigeria. *IOSR Journal of Environmental Science, Toxicology and Food Technology*, 8(4), 1-6
- Intergovernmental Panel on Climate Change (2014) *Impacts, Adaptations, and Vulnerability* Cambridge Press. Retrieved from <Http://www.answers.com/topic/global-warming>
- Lujala, P., Lein, H. & Rod, J. K. (2014). Climate change, natural hazards, and risk perception: The role of proximity and personal experience. *Local Environment*, 20(4), 1-21
- Mole, A. J. C. (2019). *Practical guide to research in library and information science*. Nsukka: UNN Press Ltd.
- Mtega, W. P. & Benard, R. (2013). The State of Rural Information and Communication Services in Tanzania: A Meta-Analysis. *International Journal of Information and Communication Technology Research*, 3(2), 64-73.
- Ogunbode, T. O., Ogunbible, P. O., Odekunle, D., & Asifat, J. T. (2019). Climate change awareness and its determinants in a growing city in the southwestern Nigeria using Multivariate Analysis. *Journal of Environmental Sustainability*, 7 (1), 1-13.
- Onah, M. A., Jeiyol, E., Adimanyi, O., & Ukange, C. (2023). Gender Perspectives of Vulnerability to Climate Change: A Descriptive Evidence from Farming Households at Ikpayongo Community in Gwer LGA, Benue State, Nigeria. *American Journal of Climate Change*, 12, 116-139. <https://doi.org/10.4236/ajcc.2023.121007>
- Onu, F. M. & Ikehi, M. E. (2017). Mitigation and Adaptation Strategies to the Effects of Climate Change on the Environment and Agriculture in Nigeria. Available online at www.unn.edu.ng/publications/files/12305_mitigation_and_adaptationpdf
- Randall, S. (2019). *Climate change and the voiceless: protecting future generations, wildlife, and natural resources*. Cambridge: Cambridge University Press,
- Sagoe, R. (2006). Climate change and root crop production in Ghana. A report prepared for environmental protection agency (EPA), ACCRA-GHANA.
- Sangotegbe, N.S., Oluwasusi, J.O. & Obayomi, J.O. (2019). Adaptation to Climate Change Effects among Rural Women in Savannah and Forest Zones of Oyo State, Nigeria. *SpringerReference*, 04(16), 1-13
- Speranza, I. C., Kiteme, B., Ambenje, P., & Makali, S. (2010). Indigenous knowledge related to climate variability and change: insights from droughts in semi-arid areas of former Makueni District, Kenya. *Climatic Change* 100, 295-315. <https://doi.org/10.1007/s10584-009-9713-0>
- Uduma, N. S., Elisha, I. & Lawrence, U. E. (2020). Analysis of women's perception and knowledge to climate change issues and adaptation strategies in Maiduguri Metropolitan Council, Borno State, Nigeria. *FUDMA International Journal of Social Sciences (FUDIJOSS)*, 2 (1), 86-97
- Watts, N., Arnell, N., & Ayeb-Karlsson, S. et al. (2019). The 2019 report of the Lancet countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. *The Lancet*, 394(10211), 1836-1878.
- World Health Organization [WHO], (2020). Climate change. Retrieval from https://www.who.int/health-topics/climate-change#tab=tab_1
- World Meteorological Organization [WMO] (2018). Climate Change. Retrieval <https://wmo.int/topics/climate-change>