

CLIMATE CHANGE AS A CORRELATE OF INCREASING INCIDENCE OF MENTAL HEALTH – IMPLICATION FOR COUNSELLING

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ABSTRACT

The study investigated the relationship between climate change and mental health in Port Harcourt, Rivers State, Nigeria. A descriptive survey method was adopted for the study. Two research questions and two null hypotheses guided the study. A sample consisting of 196 respondents was drawn from the population (who consisted of the adults resident in Port Harcourt) studied. Random sampling technique was used to draw the sample. The instrument for data collection was designed by the researchers and titled "Climate Change and Mental Health Questionnaire (CCMHQ)". The instrument was validated by three experts in Counseling. The reliability of the instrument was determined through the Cronbach alpha and the instrument yielded a reliability coefficient of 0.72. Descriptive Statistics were used in answering the research questions while the two null hypotheses were tested using the Pearson Product Moment Correlation at 0.05 level of significance. The study observed that climate change has impact on mental health in the study area. The study identified the following variables; bunkering, illegal refining as major causes of climate change, and flood and severe/extreme heat as major effects of climate change on the people and environment while depression and substance abuse disorders were also identified as the most common forms of mental illness experienced by the people in the study area as the fallout of climate change. This paper recommends among other things that the masses should endeavor to become climate-change literates and stay up-to-date with current climate change news and communications for best practices. The study sees the need for counselors to reach out to their fellow climate change and mental health colleagues towards providing solutions to the dire consequences of the fallout in mental health due to climate change. This implication calls for strong collaboration between the resource groups toward effectively tackling the menace on mental health caused by climate change.

Keywords: *Climate Change, Mental Health, Counselors, Counseling.*

INTRODUCTION

Climate change is the increasing variations in the measures of climate over a long period of time – including precipitation, temperature, and wind patterns. Features of climate change include: rising sea levels are rising, more floods, droughts and heat waves. Climate change is recognized as one of the top threats to global health in the 21st century. Mental Health impacts of climate change are significant sources of stress for individuals and communities. The social and mental health consequences of extreme and slow-moving weather events are well documented, ranging from minimal stress and distress symptoms to clinical disorder, including depression, anxiety, post-traumatic stress, and suicidal thoughts (Arnberg et al., 2013; Fullerton *et al.*, 2013; North, Kawasaki et al., 2004). High risk coping behavior, such as alcohol use, has been associated with climate related weather events (Flory et al., 2009; Rohrbach et al., 2009). Intimate partner violence may increase as well, with women being particularly effected (Harville et al., 2011; Fisher, 2010). Suicidal thoughts and behavior have been shown to increase following extreme weather events (Kessler *et al.*, 2008; Larrance et al., 2007). Individuals and communities are affected both by direct experience of local events attributed to climate change, and by exposure to information regarding climate change and its effects (Leiserowitz et al., 2013; Reser et al., 2014).

Some human health effects stem directly from natural disasters exacerbated by climate change, like floods, storms, wildfires, and heat waves. Other effects surface more gradually from changing temperatures and rising sea levels that cause forced migration. Weakened infrastructure and less secure food systems are examples of indirect climate impacts on society's physical and mental health. Weather patterns introduce lasting impacts, such as *food insecurity* (Duffy & Tebaldi, 2012; Hatfield *et al.*, 2014). Similarly, rising sea-surface temperatures have been connected to increasing rates of disease for marine life and humans (Doney *et al.*, 2014). Sea levels are estimated to increase anywhere from 8 inches to 6.6 feet due to warmer temperatures by 2100, putting millions of people living in coastal areas at risk for flooding (Parris *et al.*, 2012). As severe weather events, poorer air quality, degraded food and water systems, and physical illnesses increase, the direct and indirect impacts on health must be understood (USGCRP, 2016).

Natural disasters lead to increased rates of death and injury. The most common causes of mortality during floods are drowning and acute physical trauma, example being struck by debris (Alderman *et al.*, 2012). During and after a flood, many people sustain non-fatal injuries, such as cuts and broken bones. Among other impacts, more frequent rainfall can lead to an increase in traffic accidents (Leard & Roth, 2016).

The risk of carbon monoxide poisoning related to power outages increases as a result of climate change-induced disasters (Bell *et al.*, 2016). Disruptions to medical infrastructure, including the provision of medical supplies, can transform minor issues into major and even fatal problems. In addition, disruptions in other types of services (e.g., cell phone communication, transportation, or waste management) add stress and difficulty during the aftermath of a disaster. These disruptions may impact people's physical health by making it more difficult to access healthcare or by potentially increasing exposure to pests or hazardous substances (Bell *et al.*, 2016).

The ability to process information and make decisions without being disabled by extreme emotional responses is threatened by climate change. Some emotional response is normal, and even negative emotions are a necessary part of a fulfilling life. In the extreme case, however, they can interfere with our ability to think rationally, plan our behavior, and consider alternative actions. An extreme weather event can be a source of trauma, and the experience can cause disabling emotions. More subtle and indirect effects of climate change can add stress to people's lives in varying degrees. Whether experienced indirectly or directly, stressors to our climate translate into impaired mental health that can result in depression and anxiety (USGCRP, 2016). Although everyone is able to cope with a certain amount of stress, the accumulated effects of compound stress can tip a person from mentally healthy to mentally ill. Even uncertainty can be a source of stress and a risk factor for psychological distress (Greco & Roger, 2003). People can be negatively affected by hearing about the negative experiences of others, and by fears - founded or unfounded—about their own potential vulnerability. Mental health problems can also threaten physical health, for example, by changing patterns of sleep, eating, or exercise and by reducing immune system function.

More recent reviews concluded that acute traumatic stress is the most common mental health problem after a disaster (Fritze *et al.*, 2008). Terror, anger, shock, and other intense negative emotions are likely to dominate people's initial response (Raphael, 2007). Interview participants in a study about flooding conducted by Carroll, Morbey *et al.*, (2009) used words such as "horrifying," "panic stricken," and "petrified" to describe their experience during the flood (Tapsell & Tunstall, 2008).

For most people, acute symptoms of trauma and shock are reduced after conditions of security have been restored. However, many continue to experience problems as post-traumatic stress disorder (PTSD) manifests as a chronic disorder. PTSD, depression, general anxiety, and suicide all tend to increase after a disaster. Incidence of PTSD is more likely among those who have lost close family members or property (Wasini *et al.*, 2014). Individuals who experience multiple or long-lasting acute events - such as more than one disaster or multiple years of drought - are likely to experience more severe trauma and may be even more susceptible to PTSD and the other types of psychiatric symptoms described above (Edwards & Wiseman, 2011; Hobfoll, 2007). For example, a study

showed that refugees exposed to multiple traumatic events experienced a higher rate of immediate and lifetime PTSD and had a lower probability of remission than refugees who had experienced few traumatic events (Kolassa *et al.*, 2010). The likelihood of suicide is higher among those who have been exposed to more severe disasters (Norris *et al.*, 2002).

Counselling involves discussions of psychological issues with a trained mental health professional such as a counsellor or psychotherapist. Such discussions / therapies can help people with mental health issues to talk freely, without fear of criticism or judgement, understand what may have caused their problems and how to manage them. For non-drug therapies, a lack of minimum standards creates difficulty, especially for learners when determining whether treatments are both safe and effective. The mental health industry needs well-trained clinical mental health counselors who can educate their co-workers and strive to create guidelines for professionals across the industry. This study adopted the behavioural theory as its theoretical framework. Behavioral theory is based on the belief that behavior is learned. Classic conditioning is one type of behavioral therapy that stems from early theorist Ivan Pavlov's research. Pavlov executed a famous study using dogs, which focused on the effects of a learned response (e.g., a dog salivating when hearing a bell) through a stimulus (e.g., pairing the sound of a bell with food). Seeing all the observed and studied impacts of climate change on the cognitive, behavioural, and emotional wellbeing of humans, studying its implication for counselling practice becomes imperative.

Statement of the Problem

Climate change has become a threat to humanity's existence and attracting the needed attention of the United Nations for quick direction and action being a global phenomenon. The United Nations Intergovernmental Panel on Climate Change insists that the world must cut its carbon dioxide emissions to net zero by 2050 in order to prevent global warming of 1.5°C, or likely more, above pre-industrial levels. Nigeria Meteorological Agency (NiMet) in its 2019 prediction noted a trend that succeeding years have remained hotter than the years they preceded. This year is also following the trend and with severe consequences of flood, droughts and sicknesses like malaria in many part of the country

With knowledge that the country will be subject to consistent changes in rainfall and temperatures as the years go by with hotter and drier conditions which will likely increase the likelihood of floods, droughts and heat waves with dire consequences to agricultural production especially rain-fed agriculture, the need to carry out a study on the relationship between climate change and stress induced disorders which is an aspect of mental health concern is now a necessity. Already climate-induced conflicts are exacerbating fragile security situations as poverty has increased due to flood, pollution and family dislocations, with flashpoints mainly in the Niger Delta region of Southern Nigeria. Since climate change poses a significant threat to our development ambition, this study seek to investigate climate change as correlate to mental health and counseling needs in the Niger Delta using Port Harcourt, Rivers State as the study area.

Purpose of the Study

The purpose of the study is to investigate climate change as correlate to mental health in Port Harcourt Metropolis. Specifically, the study intends to do the following:

1. Determine the effect of climate change on mental health
2. Identify the forms of mental ill-health due to climate change
3. Examine the major causes of climate change in the study area
4. Identify the major effect of climate change in the study area
5. Identify the responses to counseling on the effects of mental health
6. Examine the effectiveness of counseling on mental health

Research Questions

The following research questions guided the conduct of the study:

1. What is the relationship between climate change on mental health status?
2. What is the relationship between counseling and mental health?

Research Hypotheses

The following null hypotheses were tested at 0.05 level of significance in the study:

1. Climate change has no significant effect on mental health status of the people.
2. Counseling has no significant effect on the mental health status of the people experiencing climate change stressors.

METHODOLOGY

Descriptive study design was deployed for this study. The data collection was focused in Port Harcourt City and the sample size was determined to be 196 respondents using Fischer formula (Kish, 1965).

The instrument for data collection was a questionnaire designed by the researchers and titled "Climate Change and Mental Health Questionnaire" (CCMHQ) that has open and closed ended questions. The instrument was segmented into two sections A and B. Section A presented information on the bio-data of the respondents while section B presented information on climate change and mental health. Out of 196 questionnaires that were distributed and collected by the researchers, 161 copies were correctly filled and used (from 114 males and 47 females ranging between 20 years and above). Data from the answered questionnaires were analyzed both qualitatively and quantitatively using percentages. All questionnaires and data were coded before analysis by identifying themes that are related to the research questions and analyzed using descriptive statistics to obtain frequencies and percentages. Fifty percent (50%) and above were accepted while 49% and below were rejected. The results were presented in tables while the hypotheses were tested using the Statistical Package for Social Sciences (SPSS) (using the Pearson Product Moment Correlation).

The instrument was validated by three experts in guidance and counseling. The suggestion of the experts was taken into consideration in drafting the final version of the instrument. The reliability of the instrument was determined through Cronbach Alpha techniques. The instrument was administered to twenty adolescents in Rivers State. The instrument yielded 0.72 indicating that it was reliable for the study.

RESULTS AND DISCUSSIONS

Table 1: Frequency Distribution of the Respondents Affirmation on the Effect of Climate Change on Mental Health

Have you had any form of mental illhealth (stress, anxiety, depression, excess heat, etc.) due to the effect of climate change?	Percent	Frequency
YES	67.2	108
NO	32.8	53

Approximately 67% of the respondents were affirmative that they have experienced one form of mental ill-health or the other due to the effect of climate change.

Table 2: Frequency Distribution of Respondents Forms of Mental Ill-health due to Climate Change

Forms of Mental Ill-Health	Frequency	Percent
Mood disorders (Depression)	79	49.2
Substance abuse disorders	37	23

Psychotic Disorders (incoherent speech, hallucinations)	21	13
Eating disorders	19	11.5
Anxiety disorder	5	3.3

The data collected from the respondents' show that about 49.2% of the respondents falls into depression, 23% are faced with substance abuse, 13% have experienced psychotic disorders, 11.5% experienced eating disorders and 3.3% experienced anxiety due to climate change effect.

Table 3: Frequency Distribution of Respondents Perception of the Major Causes of Climate Change in the Study Area

Major Causes of Climate Change	Frequency	Percent
Burning of fossil fuel	13	8.2
Bunkering	40	24.6
Illegal refining	66	41
Deforestation due to Agriculture	26	16.4
Others	16	9.8

Based on the retrieved responses, 8.2% of the respondents are of the opinion that the major cause of climate change is burning of fossil fuel, 24.6% chose illegal bunkering, 41% of them chose illegal refining, 16.4% chose Agriculture and Deforestation, while 9.8% indicated that other sources other than the above are the major causes of climate change in the study area.

Table 4: Frequency Distribution of Respondents Perception of the Major Effect of Climate Change in the Study Area

Major Effect of Climate Change in the Study Area	Frequency	Percent
Drought	7	11.5
Flood	21	34.4
Severe/Extreme Heat	27	44.3
Severe/Extreme Cold	6	9.8

The retrieved responses show that about 11.5% of the respondents indicated that drought is the major effect of climate change in the study area, about 34.4% chose flood as the major effect, 44.3% chose severe/extreme heat as the major effect and 9.8% chose severe/extreme cold as the major effect of climate change in the study area.

Table 5: Frequency Distribution of Responses to Counseling Sessions

Have you had a counseling session before due to climate change stressors?	Frequency	Percent
YES	116	72.05
NO	45	27.95

Table 6: Frequency Distribution of Respondents Responses to the Effect of Counseling Sessions

Did the counseling session have a positive effect on your mental health and wellbeing?	Frequency	Percent
YES	68	58.39
NO	48	41.61

The result of Table 6 shows that among those who submitted themselves for counseling, 58% saw a positive effect of counseling on their mental health and wellbeing after the counseling session while 48% did not see any change on their mental health status after counseling.

Statistical Test of Hypotheses

Hypothesis One

H₀₁: Climate Change has no significant effect on mental health status of the people.

Table 10: Pearson Product Moment Correlation on the Relationship Between Climate Change and Mental Health Status

		Climate Change	Mental Health Status
Climate Change	Pearson Correlation	1	.976**
	Sig. (2-tailed)		.000
	N	161	161
Mental Health Status	Pearson Correlation	.976**	1
	Sig. (2-tailed)	.000	
	N	161	161

** . Correlation is significant at the 0.05 level (2-tailed).

Table 10 reveals R-value of 0.976 which means that there is a strong positive relationship between Climate change and mental health status, also a p value of .000 which is less than 0.05 is an indication that there is a significant role that climate change plays as a correlate of mental health status. Therefore it would be undertaken that climate change plays significant role as a correlate of mental health status of the people.

Hypothesis Two

H₀₂: Counseling has no significant effect on the mental health status of the people experiencing climate change stressors.

Table 11: Pearson Product Moment Correlation on the Relationship Between Counselling and Mental Health

		Counselling	Mental Health Status
Counselling	Pearson Correlation	1	.964**
	Sig. (2-tailed)		.000
	N	161	161
Mental Health Status	Pearson Correlation	.964**	1
	Sig. (2-tailed)	.000	
	N	161	161

** . Correlation is significant at the 0.05 level (2-tailed).

From Table 11, it is observed that the correlation coefficient is .964 which shows that there is a Strong positive relationship between Counseling and Mental Health Status. The significance level of

.000 which is less than 0.05 reveals that there is significant relationship between predictor and the dependent variable. From the result above; it is rational to reject the null hypothesis and accept that Counseling does play significant role as a determinant of mental health status.

Discussion of Findings

The study looks at climate change as correlate of mental health with counseling implications. 161 respondents responded correctly to the questionnaire and 67% affirmed that they have experienced one form of mental ill-health or the other due to the effect of climate change. The result shows that 72.05% of respondents have attended a counseling session on their mental health status caused by climate change while 27.95% were yet to seek counsel on their mental health challenges. Those who were yet to visit a counseling clinic, confess ignorance of what counseling could do to mitigate their situation and some felt helpless as they could not see any help the government could proffer as they believe the government as the cause of the problems. The findings showed that 49.2% of the respondents became depressed, 23% got involved in substance abuse, 13% had psychotic disorders, 11.5% experienced eating disorders and 3.3% experienced severe anxiety. This is in agreement with the works of Rohrbach *et al.* (2009) and Arnberg *et al.* (2013).

Also based on the various responses, the major causes of climate change include burning of fossil fuel, illegal bunkering, illegal refining, agriculture and deforestation while a small portion of respondents cited other sources. The responses also indicate that 11.5% of the respondents chose drought, 34.4% chose flood, 44.3% chose severe/extreme heat and 9.8% chose severe/extreme cold as major effects of climate change in Port Harcourt. Among the respondent, 72.05% of respondents have attended a counseling session on their mental health status caused by climate change while 27.95% who were yet to seek counsel on their mental health confess ignorance of what counseling could do to mitigate their situation and felt helpless on what the perceived outcome of the engagement could be. The counseling implication produced a positive result as 58% of respondents who have visited a counseling clinic saw a positive result due to counseling. This findings are in agreement with those of Flory *et al.* (2009). From the results, it could be interpreted that while counseling showed a positive relationship with mental health status, there is need to also engage the respondents in pursue other forms of therapy like medical advice, positive attitudes, change of attitudes and a conscious positive effort to wellness.

Two hypotheses were tested for this study. The first hypothesis showed a strong positive relationship between Climate change and mental health status indicating that there is a significant role that climate change plays as a correlate of mental health status. The second hypothesis also affirms a strong positive relationship between counseling and mental health Status. This also confirms that counseling plays significant role on mental health status. These are in agreement with the works of Fullerton *et al.* (2013) and Kessler *et al.* (2008).

The implication of the findings could be interpreted that while counseling showed a positive relationship with mental health status, there is need to also engage other professionals in dealing with mental health caused by climate change. There is strong need for Counselors, health and mental health practitioners to play the unique role in influencing professional communities, the public, and policymakers on the future well-being of our health and climate. Education, awareness, communication, and involvement are key components in motivating engagement and action on climate solutions. In order to elevate leadership on climate change, awareness of the potential impacts on mental health and the need and ways to protect those who are suffering as a result of this situation becomes a strong focus for counseling practitioners. Counselors and psychologists are specially trained to help people deal with the psychological and emotional aspects of health and illness, therefore, they have to intensify the use of these knowledge to promote general well-being of the people experiencing health challenges brought about by climate change.

CONCLUSION

The outcome of this paper has mapped a link between climate change, counseling and mental health status of the people. Bunkering and illegal refining were identified as the major causes of climate change in the study area, flood and severe/extreme heat were identified as the other major effects of climate change on the people and environment. Depression and substance abuse disorders were identified as the most common forms of mental illness experienced by the people in the study area due to climate change.

To mitigate the issue of mental illness due to climate change; public awareness of clean energy has to be done, people should endeavor to nurture their connection to friends and families while non-governmental organisations (NGOs) and governments (both State and Federal) should assist with the education and provision of resources for addressing climate change and mental ill-health needs. The population should endeavor to become climate-literate with up-to-date climate change news and best practices. Finally, health psychologists and counselors who are specially trained to help people deal with the psychological and emotional trauma of health and illness have to use their knowledge to promote general well-being and mitigate the effects of climate change while global solutions are sought which surely seems to be in the long term.

REFERENCES

- Alderman, K., Turner, L. R., & Tong, S. (2012). Floods and human health: A systematic review. *Environment International*, 47, 37–47.
- Arnberg, F. K., Bergh Johannesson, K., & Michel, P. O. (2013). Prevalence and duration of PTSD in survivors 6 years after a natural disaster. *Journal of Anxiety Disorders*, 27(3), 347–352.
- Bell, J. E., Herring, S. C., Jantarasami, L., Adrianopoli, C., Benedict, K., Conlon, K., & Schreck, C. J. (2016). Impacts of extreme events on human health. In: The impacts of climate change on human health in the United States: *A scientific assessment*, 99–128.
- Carroll, B., Morbey, H., Balogh, R., & Araoz, G. (2009). Flooded homes, broken bonds, the meaning of home, psychological processes and their impact on psychological health in a disaster. *Health and Place*, 15(2), 540–547.
- Doney, S., Rosenberg, A. A., Alexander, M., Chavez, F., Harvell, C. D., Hofmann, G., & Ruckelshaus, M. (2014). Oceans and marine resources. In J. M. Melillo, T. C. Richmond, & G. W. Yohe (Eds.), *Climate change impacts in the United States: The third national climate assessment*, 557–578.
- Duffy, P. B., & Tebaldi, C. (2012). Increasing prevalence of extreme summer temperatures in the U.S. *Climatic Change*, 111(2), 487–495.
- Edwards, T., & Wiseman, J. (2011). Climate change, resilience, and transformation: Challenges and opportunities for local communities. In I. Weissbecker (Ed.), *Climate change and human well-being: Global challenges and opportunities*, 185–209.
- Fisher, S. (2010). Violence against women and natural disasters: findings from post-tsunami Sri Lanka. *Violence Against Women*, 16(8), 902–918.
- Flory, K., Hankin, B., Kloos, C., Cheely, C. & Turecki, G. (2009). Alcohol and cigarette use and misuse among Hurricane Katrina survivors: Psychosocial risk and protective factors. *Substance Use and Misuse*, 44, 1711–1724.

- Fritze, J., Blashki, G. A., Burke S. & Wiseman, J. (2008). Hope, despair and transformation: Climate change and the promotion of mental health and well-being. *International Journal of Mental Health Systems*, 2, 13.
- Fullerton, C. S., McKibben, J. B. A., Reissman, D. B., Scharf, T., Kowalski- Trakofler, K. M., Shultz, J. M., & Ursano, R. J. (2013). Posttraumatic stress disorder, depression, and alcohol and tobacco use in public health workers after the 2004 Florida hurricanes. *Disaster Medicine and Public Health Preparedness*, 7(1), 89–95.
- Greco, V., & Roger, D. (2003). Uncertainty, stress, and health. *Personality and Individual Differences*, 34, 1057–1068.
- Harville, E., Taylor, C., Tesfai, H., Xiong, X., & Buekens, P. (2011). Experience of Hurricane Katrina and reported intimate partner violence. *Journal of Interpersonal Violence*, 26, 833–845.
- Hatfield, J., Takle G., Grotjahn, R., Holden, P., Izaurralde, R. C., Mader, T., Marshall, E., & Liverman, D. (2014). Agriculture. In J. M. Melillo, T. C. Richmond, & G. W. Yohe (Eds.), *Climate change impacts in the United States: The third national climate assessment*, 150–174. doi:10.7930/J02Z13FR.
- Hobfoll, S. E. (2007). Five essential elements of immediate and mid-term mass trauma intervention: Empirical evidence. *Psychiatry*, 70(4), 283–315.
- Kessler, R. C., S. Galea, M. J. Gruber, N. A. Sampson, R. J. Ursano, & S. Wessely, 2008: Trends in mental illness and suicidality after Hurricane Katrina. *Molecular Psychiatry*, 13, 374-384.
- Kolassa, I. T., Ertl, V., Eckart, C., Kolassa, S., Onyut, L. P. & Elbert, T. (2010). Spontaneous remission from PTSD depends on the number of traumatic event types experienced. *Psychological Trauma: Theory, Research, Practice and Policy*, 2(3), 169–174.
- Larrance, R., Anastario, M. & Lawry, L. (2007). Health status among internally displaced persons in Louisiana and Mississippi travel trailer parks. *Annals of Emergency Medicine*, 49, 590-601.
- Leard, B. & Roth, K. (2016). How climate change affects traffic accidents. *Resources*, 191, 22–25.
- Leiserowitz, A., E. Maibach, C. Roser-Renouf, G. Feinberg, & P. Howe (2013). *Climate Change in the American Mind: Americans' Global Warming Beliefs and Attitudes In April 2013*. 29, Yale Project on Climate Change Communication,
- Norris, F. H., Friedman, M. J., & Watson, P. J. (2002). 60,000 disaster victims speak: Part II. Summary and implications of the disaster mental health research. *Psychiatry*, 65(3), 240–260.
- North, C. S., Kawasaki, A., Spitznagel, E. L., & Hong, B. A. (2004). The Course of PTSD, Major Depression, Substance Abuse, and Somatization After a Natural Disaster. *The Journal of Nervous and Mental Disease*, 293(12), 823–829.
- Parris, A., Bromirski, P., Burkett, V., Cayan, D., Culver, M., Hall, J., & Weiss, J. (2012). *Global sea level rise scenarios for the US national climate assessment*, 1–10.
- Raphael, B. (2007). The human touch and mass catastrophe. *Psychiatry*, 70(4), 329–336.

- Reser, J., Bradley, G., & Ellul, M. (2014). Encountering climate change: "Seeing" is more than "believing." *Wiley Interdisciplinary Reviews: Climate Change*, 5, 521-537.
- Rohrbach, L. A., Grana, R., Vernberg, E., Sussman, S. & Sun, P. (2009). Impact of Hurricane Rita on adolescent substance use. *Psychiatry: Interpersonal and Biological Processes*, 72, 222-237.
- Tapsell, S. M., & Tunstall, S. M. (2008). "I wish I'd never heard of Banbury": The relationship between "place" and the health impacts of flooding". *Health & Place*, 14(2), 133-154.
- United States Global Change Research Program. (2016). The impacts of climate change on human health in the united states: a scientific assessment.
- Wasini, S., West, C., Mills, J., & Usher, K. (2014). The psychosocial impact of natural disasters among adult survivors: An integrative review. *Issues in Mental Health Nursing*, 35, 420-436.
- Yahya, M. "Nigeria must lead on climate change" Daily Trust, April 2, 2020