



# POLICY IMPLICATIONS OF CLIMATE CHANGE ON THE MENTAL HEALTH OF TERTIARY INSTITUTION STUDENTS IN NIGERIA: A SYSTEMATIC REVIEW

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### Abstract

Climate change continues to impede stable health conditions, thus, attracting scrutiny for its roles in the upsurge of mental ill health. Therefore, besides appropriating recommendations in the end, this study reviewed relevant scholarships to determine the extent of work done on the roles of climate change in the upsurge of mental ill health among Higher Education students in Nigeria. A systematic review of related studies in English indexed in the Medline Pubmed database, was conducted in four sequences and spread across a twenty-one years' period spanning between January 2000 to January 2021. One search term quoted as: *climate change, mental health, tertiary institution students, policy, Nigeria*, was used for each five year sequence. The search yielded 138,000 results for January 2000-2005; 89,100 for January 2006-2010; 139,000 for January 2011-2016; and 58, 900 for January 2017-2021. From all the results, only six publications were initially considered relevant and only one publication with a slightly proximate affinity was eventually selected and reviewed accordingly. Although the selected publication arrived at policy-based recommendations for government reforms, it remained silent on the need for protecting the environment while equally promoting students' stable mental health. In essence, no publication within the Medline database investigated climate change as a precursor to students' mental ill health in Nigeria. This signalled a critical gap in the climate change study area, particularly on higher education students' mental health in Nigeria, and the urgent need to plug it through effective, evidence-based/informed policy mapping.

### Keywords

Climate change, mental ill health, Medline Pubmed, Higher education, policy, database.

### Introduction

#### Study Background

Amongst a pool of sociological forces inhibiting excellent tertiary academic performance in Sub-Saharan Africa and Nigeria in particular, mental ill health ranks as a major impediment. Generally speaking, consequences of extreme weather conditions resulting from climate change continue to negate global human sustainability especially with recourse to mental health challenges. The usually disruptive effects raise doubts about how much longer available natural resources in concert

with human effort may prevent a major disastrous event. Key discourses on the history, recent trends and emergent concerns about climate change intensity along with its inevitable consequences on human health, remain dominant (Cianconi *et al*, 2020). While human life is considered the most vulnerable in climate change incidences, there barely is a study invested on causalities of climate change that has not indicted humans as a community of pivoting aggressors. For instance, Balbus *et al*, (2016) emphasise the difficulty in isolating human health history from altered environmental

compositions and climate variability. Of the alteration in ecological stability, the World Health Organisation (2003) insists human activities more than anything else are culpable. Each study implicates commitments to rising economic demands as facilitators of activities likely to upset the atmospheric concentration of energy-trapping gases, thereby intensifying the effects of natural greenhouse gas (GHG) responsible for earth's habitability. Mason-Delmotte (2018) in an empirical study titled "Global Warming of 1.5°C", credited to the United Nations Intergovernmental Panel on Climate Change (IPCC), reports a global warming rate of 1°C traceable to the pre-industrial era.

The danger in Mason-Delmotte's finding lies in the revelation that two-third of global warming has been recorded between 1986 and 2018 when the report was documented. The graver exigency here nonetheless, lies in his claim of the earth as having recorded 20 of its warmest years in the last 22 years. Balbus *et al*, (2016) posit that every slip in the past, of routine ecological frequency resulting in weather extremes like the kind contained in Mason-Delmotte's study, meant humans had to suffer at least twice as much damage in both health and material resources and the situation is likely to worsen. Damaging health effects substantiate the extent to which global human populations are on the receiving end of diverse climate change-inspired health stressors (Jouni Paavola 2017). Of mental health especially, some studies have traced causal agents of the condition to the rapid deviation in ecological balance. The amount of studies channelled in climate change, its direct and indirect mental health challenges notwithstanding, some scholars acknowledge a significant rift in areas covered. For instance, Weir (2016) accuses existing climate change discourses of subverting mental health to a deplorable almost non-existent level. In sub-Saharan Africa and Nigeria in particular, paucity in climate change-based mental health research does not make its impacts an illusion. The magnitude of such effects on different age groups, professions and interest groups has remained much less understood.

### **Problem Statement**

Recurrent concerns on mental health transcend risks from other known sociological factors. They

precipitate growing demands for examination of material knowledge around climate change-inspired mental illness and their existent coping mechanisms amongst higher education students in Nigerian tertiary institutions. Agreeing that climate change in Nigeria may have long been a silent, yet dominant factor behind this group's mental health challenges has to be the first major path towards examining existent policies around it. Although despite acknowledging the need for such policies and measures in the fight to maintain stable mental health of certain age groups, scholarly preoccupations have largely hinged on risk factors rather than resistance and preventive policies. This stance further questions how much longer it would take before studies begin to unveil disruptive impacts that demand preventive policies. It is unclear whether or not there are available data with which preventive standards may be instituted to shield tertiary institution students' mental health from the drawbacks of extreme weather conditions.

That said, suffice it to note that effective precautionary measures involve expert discussions of students' susceptibilities and the resources required to combat climate change impacts on their mental health. The assumption that adjustments being fundamentally about risk management are enough, may not avail without provision of clarity around the material risks along what they entail in a bid to establish appropriate protection mechanisms (Rother, *et al*, 2020).

### **Research Questions**

The following research questions were initiated to determine the extent to which studies have been conducted on climate change and its effects on the mental health of tertiary institution students in Nigeria:

what effects does climate change have on tertiary institution students' mental health in Nigeria?

what is the volume of existing climate change research on mental ill health among higher education students in Nigeria?

what is the quality of available climate change studies on mental ill health among higher education students in Nigeria?

how strong is the commitment level of existing climate change research on mental ill health among higher education students in Nigeria?

how effective are the existing policy recommendations?

### **Aim/Objectives**

While this study aimed at engaging a systematic review of existing studies on climate change and the mental health of tertiary institution students in Nigeria, the specific objectives,

- identified the effects of climate change on tertiary institution students' mental health in Nigeria.
- investigated the volume of existing climate change research on mental ill health among higher education students in Nigeria.
- examined the quality of available climate change studies on mental ill health among higher education students in Nigeria.
- interrogated the commitment level of existing climate change research on mental ill health among higher education students in Nigeria.
- initiated appropriate policy recommendations.

### **Study Scope**

The study was generally a systematic review of relevant publications indexed in Pubmed Medline, which premised existing studies on climate change and the mental health of tertiary institution students in Nigeria. The review premised empirical studies carried out in Nigeria. Therefore, in this review, the main focus was on available research that determined the extent to which extreme weather conditions have affected and continue to affect the mental health of students enrolled to undertake higher education training in Nigerian tertiary education institutions.

### **Literature Review**

In this section, we will be considering the steady rise in temperature, desertification, inconsistent rainfall, drought, land degradation and sea level fluctuations occasioned by flooding, as major predictors of

climate change in Nigeria. Besides ensuring biodiversity loss, these incidences are consistent with extreme weather events that have often harmed fresh water resources. The 1980s marked a decade of significant rise in climatic disruptions in the country (Haider & Huma, 2019; Ajayi *et al*, 2011). Extreme weather events have since then, effected a number of harmful socio-economic and cultural realities. Recent projections reveal a significant increase in temperature over all the ecological zones within the coming decades (Haider, 2019). Longer durations and intensities of rainfall for instance, continue to signal projections of variation increase. Rising sea levels in the south consistently aggravate cases of flooding, with documented instances of coastal areas experiencing partial submergence. In Northern Nigeria where droughts are traditionally gaining foothold, the trend is expected to continue. Consistent rise in temperature may culminate in the possible drying up of Lake Chad and others within the country. The extreme heat is affecting several millions of people who cannot access an alternative means of reconditioning the hot air they breathe (Dunne, 2020).

The fact that only a handful of accessible studies have complemented their discourses with valuable data, contradicts the urgency in the disruptive impacts of climate change in Nigeria. What is left of other related literature, invest their climate change findings on impacts and interventions on a few key sectors like agriculture where the focus is on individual farming communities in particular regions of the country (Haider, 2019). With a population estimated to be over 200 million people, Nigeria ranks as Africa's most populous nation structured into 36 states. It is a multi-ethnic, culturally diverse society accounting for well over 250 ethnic groups (Folarin, 2020). By 2050 and presumably the end of the century, Nigeria is projected to have the capacity of becoming the third most populous country in the world— maybe even the second largest. This projection is made with the thinking that over half of the country's population falls under the age of 18 yet. Though considered Africa's largest economy, as a country and society, Nigeria is saturated by economic inequities. Its exerting reliance on oil exports is known to often expose it to fluctuating oil fortunes. Thus far, the country has been on a long economic slump since its

entering into a recession in 2016, after a global fall in oil prices.

In addition to oil dependence exertions, the culture-influencing nature of Nigeria accounts for its position as the world's second largest entertainment export. In spite of this, over half its total population lives below poverty margins of \$1 USD. Thus, understandably, Pundits estimate the battered state of the country's economy to possibly drift into economic depression after the slump in oil price worsened from the recent COVID-19 pandemic.

Nigeria's eternal energy crisis contradicts its position as the biggest oil exporter on the continent. It is estimated that on the average, more than one in three Nigerians cannot access electricity. An unsavoury position of this nature has predisposed the average Nigerian firm and home to fall back on generating sets as an initial option for both economic and social survival across the country. Responses from a 2015 survey revealed that about 61% of the population in Nigeria considers climate change a "very serious problem", a figure which compares to a global average of 54%. It then is safe to say "Nigerians consider "extreme heat" as the most significant of all threats attributable to climate change (Dunne, 2020). Beyond the benign discomfort of irritation, agitation and listlessness, Cooper (2019) lists increasing rates of anxiety, depression, posttraumatic stress disorder, and even death as by-products of extreme heat, accounting for "the single largest weather-related cause of death, exceeding hurricanes, lightning, tornadoes, floods, and earthquakes combined".

### **Mental Health in Nigeria**

Tackling health hazards from the changing climate has assumed a significant issue in the Nigerian scholarship space; one that will engage researchers in the coming years as many of them awaken to the impacts-associated complexities (Obasuyi, 2019). One of the most pressing of these health hazards is mental health disorder. In an investigative health report on Al Jazeera, Mbamalu (2019) reveals that along with ranking 15th in global frequency of suicide according to the World Health Organisation, Nigeria records the highest caseload of depression in Africa. What is more puzzling about the figure, Mbamalu, explains, is that only 150 psychiatrists are

at the disposal of Nigeria, a country of over 250 million people, with an estimation from WHO pegging the number of mentally ill patients in Nigeria who have access to medical care to be around 10 percent. The figure in Nigeria substantiates public health experts' estimation of global affliction rate of mental health disorders having the likelihood to peak at 15% by the end of 2020. What this implies is that much more than complications from HIV/AIDS, heart diseases, violence, accidents and wars combined, several individuals are likely to be incapacitated by typical mental illnesses in the guise of anxiety, depression and other mental instabilities from substance abuse (Suleiman, 2017). Of the over 200 million plus population size in Nigeria, an estimated 20%–30% are suspected to be potential mental ill health patients. Generally speaking, the bleakness of Nigeria's mental health situation is better captured by the 2006 WHO-AIMS study on Nigeria's mental health structure. The study acknowledges the system as a product of a *deplorably neglecting culture derived from a moribund health policy. It reveals that after the 1991 formulation of the current Mental Health Policy document in Nigeria, it has never been revised. Worse still, neither has a formal assessment been engaged whatsoever to determine the extent to which the existing one has been implemented.* The most alarming bit to the revelation here is the acknowledgement that *not even a single desk may be found in any of the existing ministries at any level where issues in mental health are addressed. Sadly, it notes that only a meagre four per cent of government expenditures on health narrowly funnels into mental health-related cases.* This reality interrogates the outcome of the 2001 Abuja Declaration where Nigeria had along with 20 other African Union member-nations, signed, pledging to allot 15 percent of her federal budgets to healthcare provision. An average of about 4 percent (3.95) of the nation's budget allocated towards funding the Ministry of Health as at 2018, confirms a WHO (2011) finding which revealed that several years after the declaration at Abuja, Nigeria had only an abysmal progress to show for the target (Mbamalu, 2019).

### **Data Sourcing Burdens of Climate Change on the Nigerian Mental Health Scape**

The importance of conveying accurate background

contexts for locating health policy research and by extension, Health Systems Governance in every society prevails on researchers to provide reliable data (Walt *et al.* 2008). However, the stark absence of a dependable statistical system has been counterproductive to this responsibility and largely a major research encumbrance in a number of low and middle income countries (LMICs), amongst which Nigeria is a leading instance. Instabilities in Nigerian politics coupled with limited infrastructure, play crucial roles in hindering financial resources and legislation from attending to the exigencies of mental health challenges through effective mental health policy (Urigwe, 2010). The Federal Ministry of Health's resort to peg a rough estimate of mentally ill individuals in Nigeria at around 60 million people in 2018, resulted from this bottleneck.

Thus, researchers bemoan the lack of reliable data linking mental illness to climate change in Nigeria. Notwithstanding, a glut of evidence abound, indicating that Nigerians in their millions undeniably endure bouts of mental illnesses as after-effects of extreme weather events. The unifying pitfall with such studies is that data reliance may not be completely representative of the real situation as sourcing, management and analyses may have been poorly set up from zero to poor funding. Mental health problems from climate change incidences thrive where information does not exist on the frequency and intensity of effects. Such effects also flourish from a chain of associated socioeconomic and demographic variables like low average education levels, and large numbers of children and old people with little or no information to survive on. In addition, there appears to be systemic permanence of limited health legislation or policy implementations structured to be functional to individuals with access to equally limited healthcare facilities in urban areas. While that remains the case, the system remains dysfunctional to rural dwellers—many of whom grapple with the struggle to understand the nature and solutions to their mental illness.

### **Climate Change, Mental Health and the Nigerian Education System**

Studies in Climate change do not only cut across regions, but class, sectors and professions. Such

studies' considerations within the Nigerian social context tend to have evaded the rather obvious concerns about how climate change impacts education and mental health—two distinct concepts pivotal to the survival of every society. Climate change continues to bear down directly on health and has garnered inestimable amounts of scholarly literature across global discourses through conferences and peer reviewed studies in journal repositories. However, there appears to be an obvious drought of similar efforts within the educational purview, especially as it affects tertiary education students' mental health in Nigeria.

### **A Systematic Review of Climate Change Studies on Mental Health of Tertiary Education Students in Nigeria**

#### **Methods**

The review began with a thorough search for publications on studies that investigated the roles of climate change in the upsurge of mental ill health among Higher Education students in Nigeria. Owing to the need to identify relevant publications with verifiable evidence, search was restricted to PubMed database. Much of the decision was due to the wide academic recognitions accorded PubMed for publishing studies with dependable evidence. Journals indexed in the database have been noted to be mainly peer-reviewed journals. Therefore, a MEDLINE entrez PubMed search was conducted from January 2000 to January 2021. Studies published in English language, premising the roles of climate change in the upsurge of mental ill health among Higher Education students in Nigeria were sought. The search was sequenced into four streams and spread across a twenty-one years' period spanning between 2000 to 2021. Two search categories were employed using key words with each yielding a number of publications. The search was spread across three initial sequences of five years (January 2000-2005, 2006-2010, 2011-2015,) with the last one spanning six years (2016-2021). The general search terms for the four streams were: *climate change, mental health, tertiary institution, students, policy, Nigeria, January 2000-2005*. After close examinations of the publication results, a total of (6) publications were derived. A further examination of the relevance of all six publications to the study revealed that only one study approximated the set inclusion criteria.

All selected (6) publications were subjected to the

study inclusion criteria as a means of determining those that not only addressed the subject, but met the study objectives. Selecting the publications went through a three-stage process. The first was a critical look at their titles. At this stage, titles unrelated to the subject matter were discarded. Afterwards, those neither conducted in Nigeria or fell short of the primary study objectives were isolated. The second stage involved critical examinations of their Abstracts. At this stage, some publications that did not meet the study criteria were not considered for further attention. Hence, where an Abstract appeared relevant, the full publication was sought for inclusion into the review. Following these processes, only one (1) publication was noted to have partially met the study inclusion criteria and was selected for the review.

The following study inclusion criteria were used:

1. Studies were primary scientific investigations, not reviews.
2. Studies targeted public health programs or projects with particular interest in addressing the impacts of climate change on higher institution students' mental health.
3. Studies evaluated the outcomes of such programs or projects.
4. Studies had policy-relevant evidence.

The exclusion criteria highlighted below were applied:

1. Studies that fell within the scope of systematic and/or scoping reviews.

2. Studies conducted outside the precincts of the study area (Nigeria).
3. Studies not concerned with students' mental ill health in Nigerian tertiary institutions
4. Studies not indexed in the PubMed Medline database.

The third stage of the selection process, involved a careful screening of the related articles and references of the above one (1) selected publication for more relevant publications that satisfied the study inclusion criteria. Following this, no additional publications emerged for review. Therefore, the entire selection process yielded one publication which was included in the review.

**Data Analysis**

For the purpose of subjecting the selected publication to content analysis and critical review, the following information were considered relevant: the Author(s), year of publication, institution of origin of the programme or project, health issue(s) addressed, the scope or nature of partnership, study design, the target population or data source, evidence generated from the study and the policy implication of the study including the recommendations. The information was sought and presented in the next stage.

**Table 1:** search results indicating publications on the Pubmed database on climate change impacts on students' mental health in Nigerian Tertiary institution(s)

S/N	Search grid	Results	Retrieval Time (in seconds)	Retrieval Date	Publications on climate impacts on students' mental health in Nigerian Tertiary institution(s)	Publications on other causes of students' mental ill health in Nigerian Tertiary institution(s)
1	January 2000 - January 2005	138,000	0.65 seconds	03/04/2021	0	2
2	January 2006 - January 2010	89,100	0.65	06/04/2021	0	1
3	January 2011 - January 2015	139,000	0.61	18/04/2021	0	2
4	January 2016 - January 2021	58,000	0.51	04/05/2021	0	1

Table 1 above, portrays the outcomes of periodic searches conducted on the Medline Pubmed database within a given period (date) and time. Each search effort was focused on highlighting the depth of available scientific investigations invested in determining the extent to which emergent ruptures in climate change have impacted the mental health of students in Nigerian tertiary institutions. The search was spread across three initial sequences of five years (January 2000-2005, 2006-2010, 2011-2015,) with the last one spanning six years (2016-2021). The first search terms: *climate change, mental health, tertiary institution, students, policy, Nigeria, January 2000-2005*. The search, conducted on 03/04/2021, yielded an initial one hundred and thirty-eight thousand (138,000) search results in 0.65 seconds with only two publications slightly meeting the inclusion criteria and were tentatively considered while the search grid was further widened. For the next search representing another five-years' period (2006-2010) and conducted on 06/04/2021, the terms remained the same: *climate change, mental health, tertiary institution students, policy, Nigeria, January 2006-2010*. It yielded eighty-nine thousand, one hundred (89,100) publications in 0.65 seconds. Nonetheless, only one (1) publication approximated an insignificant aspect

of the inclusion criteria. A search grid was widened for the third time to account for the next five-years period (2011-2015). While the search terms remained the same: *climate change, mental health, tertiary institution students, policy, Nigeria, January 2011-2015*, it yielded one hundred and thirty-nine thousand (139,000) publications in 0.61 seconds. After critical examinations however, only two (2) publications had slight connections with clauses contained in the inclusion criteria. The fourth and final search sought publications that spanned the next six years (2016-2021) on the same database for publications premising the subject under investigation. Conducted on 04/05/2021, the search yielded an initial fifty-eight thousand (58,000) search results in 0.51 seconds with only one (1) publication slightly meeting the inclusion criteria and was finally admitted for review for its relevance to the study. Therefore, of all six (6) publications identified and set aside for a systematic review consideration in this study, only one (1) was eventually admitted.

**Table 2:** available publication(s) on students' mental health in Nigerian Tertiary institution(s) on the Medline database

S/N	Author(s)/year of publication	Study design	Study location	Aim of the study	Health implications of climate change discussed	Study population sampled	Policy implications
1	Dabana & Gobir (2018)	Cross sectional	Ahmedu Bello University (ABU), Zaria	It determined the prevalence of depression among ABU undergraduates along with the academic factors associated with it	Nil	ABU under-graduates	To foster prevention and control of depression in undergraduate students in the study area

## Results

The sole study identified to have met aspects of the study inclusion criteria was used for this review. The outcomes of the review are presented using two tables. For ease of presentation and discussion purposes, the publication was categorized according to the cause of mental health issue addressed in the programme or project. Results available on the Pubmed database indicated that 1 out of the 6 studies (16.6%) selected, investigated depression as a major precursor to mental health disorders among students in tertiary institutions (Table 1). Dabana and Gobir (2018) assessed the prevalence levels of depression among undergraduate students of Ahmedu Bello University, Zaria, using data sourced through a self-administered Patient Health Questionnaire (PHQ-9). The study's adoption of Patient Health Questionnaire (PHQ-9) served as a tentative diagnostic tool for assessing "depression in at-risk populations, for example, those with coronary heart disease or after stroke or university students". PHQ-9 which can equally serve for assessing depression severity and possible treatment response, is understood to have 61% sensitivity and 94% specificity in adults. The PHQ-9 method grades all the nine Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria individually as: "0" (not at all) to "3" (nearly every day). Each of the nine criteria, demands that respondents must read every detail of the options, after which they are to circle an option that best describes their experiences. Results obtained determines how respondents' depression severity is classed: 0–4 indicates no depression; 5–9, mild; 10–14, moderate; 15–19, moderately severe; and 20–27, severe depression.

The study reported that majority of the respondents (58.2) who fell within ages 17-21 battled depression. It equally reported that the least frequency of respondents (0.8%) fell in the age brackets of 32-36 years. Overall, age-wise, the study revealed respondents' lowest and highest ages to be between 17 and 34 years. In terms of respondents' study level, 100 level students made up the highest proportion with students in 600-level ranking the least in representation (2.4%). Pertaining to the depression level among respondents, figures in the study generated from the PHQ-9 grading method indicated depression in 58.2% of the respondents, whereas 37.0%, 15.7%, 3.9%, and 1.6% showed mild, moderate, moderately-severe, and severe

depression, respectively.

Dabana and Gobir (2018) therefore concluded that depression at different levels of acuteness was diagnosed in respondents. They suggested that additional screening and counselling services be made accessible to students in the study area. They further recommended that extended researches on non-academic factors predisposable to depression be carried out with the hope that they will serve as guidelines towards formulating policies for prevention and control of depression in the study area.

## Policy Implications/ Recommendations

Findings from the study presupposed the following recommendations became immanent that:

- further studies on climate change be initiated to account for its effects on every facet of the human endeavour.
- mental health screening be taken into serious consideration for first and midyear students in Nigerian tertiary institutions.
- stakeholders in key sectors of education and health in Nigeria initiate sustainable platforms for interdisciplinary collaborations premising intensive evidence-based scientific research in climate change and mental health.
- courses in climate change be included in every level of the Nigerian academic curricular as a precautionary measure against possible polarizations
- a sustainable actionable policy be instituted to account for the remote causes of mental ill health amongst students of tertiary institutions in Nigeria, especially with a view to determining the roles of climate change in the escalating suicide trend amongst student-victims.

## Conclusion

This study affirms an obvious silence in scholarship, on the damaging impacts of climate change on the mental health of students in Nigerian tertiary institutions. If anything, the failure of most related research indexed on the Pubmed database to meet up with the demands stipulated in the study's inclusion criteria confirmed it. It was discovered that there were no empirical studies or scientific investigations



targeted at highlighting public health programmes or projects with particular interest in addressing the impacts of climate change on higher institution students' mental health. As confirmation, results from extended searches on the PubMed database revealed an absence of studies that evaluated the outcomes of any programmes or projects with climate change impacts on Nigerian tertiary institution students as an aim. In the end, it is safe to declare that in the course of engaging a systematic review of existing studies on climate change and the mental health of tertiary institution students in Nigeria, the research discovered that:

- no existing empirical study identified the effects of climate change on tertiary institution students' mental health in Nigeria.
- the almost non-existent volume of existing climate change research on mental ill health among higher education students in Nigeria reflects the damaging negligence in this area of critical concern.
- it is difficult to determine the quality of available climate change studies on mental ill health among higher education students in Nigeria.
- the commitment level of climate change research on mental ill health among higher education students in Nigeria is at its lowest at the moment.
- there is a need for informed policy recommendations tailored to meet the realities of climate change impacts on education in Nigeria as a collective entity.

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