

Nigerian Climate Change and Its Effects on Environmental and Human Health: A Narrative Review

Usman Sabo Ago Amina^{1*}, Zulkifli Mohamad¹, Muhammad Gwadabe Uzairu¹, Suleiman Ibrahim Yahaya², and Yusuf M.B Maryam²

¹Department of Business Administration, Faculty of Business and Management, University Sultan Zainal Abidin, Terengganu, Malaysia

²Department of Business Administration, Faculty of Business and Management, Federal University Dutse, Jigawa - Nigeria

*Corresponding author email: aminausman960@gmail.com

ABSTRACT

Nigeria's human and environmental health is severely impacted by climate change related phenomena such as flooding, air pollution, droughts, erosion, etc. The effects of climate change on environmental and human health in Nigeria suggests that it is now urgent to take health concerns into account when making mitigation and adaptation plans for the effects of climate change. For the Nigerian health sector to be managed effectively, mitigation and adaptation methods are consequently required. The methods for increasing resilience and decreasing vulnerability for environmental sustainability and health in Nigeria are described in this paper. It also highlights the critical need of educating Nigerian institutions and communities about the effects of climate change on human and environmental health as well as creative solutions, such as planned tree planting events, environmentally friendly green technology, and awareness campaigns for sustainable development in Nigeria. The work is highly noteworthy due to the fact that it investigates novel avenues for mitigation and adaptation to the effects of climate change on human and environmental health in Nigeria.

Keywords: Nigeria, Education, Human health, Environmental health, Climate change

INTRODUCTION

Concept of Environment

The World Health Organization defines the environment as any externally observable, adaptable feature that is chemical, physical, or biological, as well as all associated behaviors necessary to create and maintain a healthy, livable environment (Moran, 2022). Anything in a person's physical environment that adversely affects their growth, well-being or ability to survive is considered an environmental health factor. Environmental health therefore considers the various facets of public health (such as quality of life) that are influenced by physical, chemical, biological, social, psychological and environmental elements. It also refers to the idea and process of assessing, modifying, preventing, and managing environmental conditions that could potentially adversely affect the health of present and future generations (Manisalidis et al., 2020). Most diseases typically have a complex etiology that allows for a variety of causative and pathogenic elements, such as exposure to external agents. Environmental chemicals have the potential to cause, influence or alter virtually all human diseases, according to scientific and clinical data. Recognizing and capturing fundamental biological processes that alter environmental functions and cause the emergence or significant modification of disease processes is a key component of improving public health. By protecting basic health needs such as access to clean drinking water, clean air and safe food for residents, environmental health practices contribute significantly to creating and maintaining an environment that promotes public health in the community (Odipe et al., 2019). Awareness campaigns are a useful strategy that can be used in climate change education for sustainable environmental health and development in Nigeria. They have been shown to have tremendous health and therapeutic benefits. Therefore, the aim of this study is to compare and contrast the databases on the effects of climate change on the environment, public health and the consequences of these phenomena on the human population. The PRISMA approach was used to assess the literature on the environmental and public health impacts of climate change.

METHOD

A systematic technique, namely the Preferred Reporting Items for Systematic Reviews and meta-analyses (PRISMA) (Fig. 1), was chosen to find and assess the available literature on climate change and its effects on the environment and public health. The PRISMA criteria have been included in several environmental researches, especially in literature reviews (Hassan et al., 2019). The PRISMA statement is necessary for the publication of a systematic review as it includes a four-step flowchart (Fig. 1) and a checklist of 27 items (Liberati et al., 2009). The PRISMA model provides trustworthy results on which judgments and decisions can be made by using systematic techniques to reduce bias (Liberati et al., 2009).

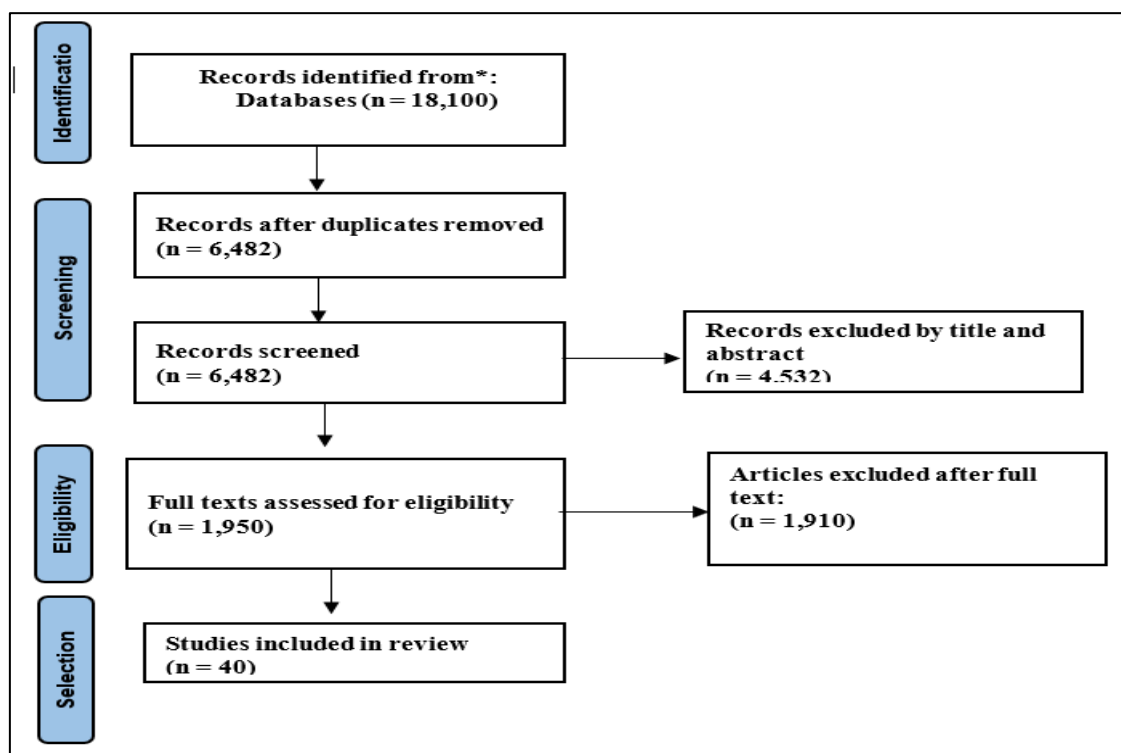


Fig. 1. An adapted version of the Preferred Reporting Items for Systematic Reviews and meta-Analyses (PRISMA) methodology approach (Moher et al., 2009).

Using relevant peer-reviewed and gray literature from four electronic databases; Scopus, Google Scholar Web of Science - Medline for Medical Subject Heading (MeSH) terms including “Rubella” for Measles, “Falciparum Malaria for Malaria, Falciparum, “P.vivax” for Malaria, vivax, “Malaria vivax” for Tertian Malaria, “Plasmodium Malariae” for Quartan Malaria, “Hyperthermia induced” for Malaria Therapy, and “Sex Transom DIS” for STDs. A thorough literature search was conducted using unpublished dissertations, reports, conference proceedings, unpublished book chapters and e-books as examples of gray literature. For the search strategy, the articles were identified using terms such as “climate change” as well as search phrases such as “climate change impact on environmental and public health” were used to find the relevant articles 16,900, in google scholar after restricting to English language review articles from 2022 to 2024 and 1,200 in Scopus after restricting to English language articles in “environmental science” and “public health” from 2022 to 2024. The aim of the review was to guide the search for keywords and phrases. The review included peer-reviewed articles published after 2021. After entering the relevant keywords, 18,100 articles were extracted from all databases for this study. Screening was performed to remove duplicates, with 11,618 duplicates removed. The studies selected at the first stage of screening amounted to 6,482. A total of 6,442 articles were excluded and only 1,950 articles were retained. A total of 1,910 articles were eliminated after reading the full text, leaving 40 eligible papers for in-depth analysis. Eligibility criteria: The inclusion and exclusion criteria were applied to weed out duplicates and select only relevant articles. This review includes only empirical research on the effects of climate change on the environment and public health. Articles on other topics were not included in the review as it focuses on the environmental and public health impacts of climate change. Only peer-reviewed articles were included in the study; reviews were excluded. Articles and peer-reviewed journals published in English were included; non-

English articles were excluded. Articles that were not accessible in their entirety were also excluded. Any paper published before 2022 was excluded. We note that a small number of papers may have served as the basis for this paper. Based on the exclusion and inclusion criteria used in this study, forty papers were considered acceptable for review.

Human Health

Human health defined as the totality of physical, social, and mental well-being is as vital as water, food, and energy (Britton et al., 2021). Rising temperatures, air and water pollution, disease vectors, floods, and droughts threaten human health (Rautela et al., 2021). In growing refugee camps, diarrheal diseases, measles, acute respiratory infections, malaria, sexually transmitted diseases (STDs), malnutrition, and chronic diseases are rising. Extreme heat waves, food insecurity, forced migration, and weather-related disasters are also increasing mental illness due to climate change. Climate change may cause posttraumatic stress disorder (PTSD), depression, domestic violence, generalized anxiety, and substance abuse (Walinski et al., 2023). Global environmental degradation has a major impact on human health. Research has shown the urgent need to educate Nigerians and institutions, especially medical ones, on how climate change affects the health system and how to adapt and mitigate for global sustainability (Raimi et al., 2021). Climate change and health education should be accelerated in medical schools in Nigeria and other countries so students can recognize, diagnose, and treat climate-related health disorders and understand public health issues (Ekeka & Adikuru, 2022).

Climate Change

Climate change is any long-term change in climate, whether caused by humans or nature (Morales, 2022). Climate change may threaten human existence. Global health is affected by clean air, safe water, food, and shelter (Shivanna, 2022). Climate change causes heat waves, weather extremes, air pollution, vector migration, and displacement, which increase water and environmental diseases (Huckelba & Van Lange, 2020). Floods harm health greatly. Unsafe drinking water and sanitation problems spread deadly infectious diseases like cholera, malaria, diarrhea, skin and soft tissue infections, and airborne infections (Liu et al., 2023). Mental health issues are becoming more common due to environmental changes (Charlson et al., 2021). Climate change impacts weather, air, water, oceans, and ecosystems (Lee et al., 2023). Some academics believe climate change education should emphasize critical and creative thinking, capacity development, and learning to prepare young people to respond to climate change (Taimur & Sattar, 2020). Climate change, which affects disease burden worldwide is a major public health threat in the 21st century. The World Health Organization (WHO) estimates that global climate change will cause 250,000 deaths annually between 2030 and 2050 (Organization, 2021). Climate change threatens our generation. Climate change will impact food, air, and water, the basic determinants of health (O'Sullivan, 2021). To address this issue, we need global advocates who prioritize health and climate change. Experts recommend climate-smart agriculture for many reasons which include concerns that climate change will make it harder to feed 10 billion people by 2050 (Azadi et al., 2021). Burning fossil fuels and releasing greenhouse gases faster than natural processes are the main causes of global warming. Rising temperatures will kill more people unless industrialized nations take immediate mitigating measures (Van Lange & Rand, 2022). Temperature and precipitation changes cause large disease transmission and chronic disease development. Heat harms older people, pregnant women, low-income families, and people with pre-existing conditions more. Pregnant women are especially sensitive to environmental heat because rising temperatures directly affect their gestation period and increase the risk of premature birth and birth abnormalities (Ebi & Hess, 2020).

CONCLUSION

In communities and institutions across Nigeria, an integrated approach to capacity building at the national level can help raise awareness of the importance of the impact of climate change on human and environmental health. More studies are still needed to fill the information gaps on the likelihood of future exposure patterns to climate and environmental changes and the vulnerability and resilience of physical, ecological and social systems to such climate changes. In addition, immediate action by the federal government, other non-governmental organizations (NGOs) and multilateral organizations is needed in the form of adequate funding to support tree planting campaigns, the introduction of environmentally friendly technologies and timely climate change education. Adequate education on climate change and health by qualified medical practitioners and



educators will go a long way in halting the spread of diseases and loss of lives and property associated with climate change, thereby helping communities to adapt and mitigate the impacts of climate change on human and environmental health in Nigeria.

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