

Knowledge, Perceptions of Climate Change and its Effects Among Young People in Africa

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Abstract

Climate change, driven by greenhouse gas emissions, poses a significant threat to human life and livelihoods. Africa, particularly vulnerable despite minimal contributions to global emissions, experiences extreme weather events like floods and droughts, leading to displacement, food insecurity, and loss of life. While climate change awareness is growing globally, understanding young people's knowledge and perception of climate change in Africa is critical and has not been well elucidated. This study investigated the knowledge and perceptions of climate change among youth participants at the 3rd cohort of Nairobi Summer School for Climate Justice 2024. A mixed method, cross-sectional survey, and Focused Group Discussion (FGD) of 71 youth respondents drawn from 40 countries in Africa and Asia. The questionnaire surveys and FGDs were conducted to gather data on participants' knowledge and perception of climate change in their countries. Majority of respondents (36%) defined climate change as changes in weather and climate patterns. Seventeen percent attributed it to atmospheric changes, while 12% linked it to human-induced activities. Eleven percent noted that environmental impacts had led to climate change, and 9% believed it was associated with global warming. Only 7% defined climate change as average weather conditions. 40% of respondents said climate change has an impact on human health, with 24% specifically mentioning mental health. 23% believed that environmental changes happen due to climate change. 10% attributed climate change's impact to economic and livelihood dynamics, indicating the critical role of environmental factors and social determinants of health in exacerbating climate change's health effects. Only 2% perceived the healthcare system as being insufficiently resilient to address and mitigate climate-related health impacts. The result of this study provides a foundational knowledge base that is essential for developing effective strategies to adapt and adjust to the challenges posed by climate change. It will further enable adoption of adaptation and adjustment strategies to combat the health effects of climate change through community ownership. By examining the knowledge and perceptions of this specific group of young climate activists who attended the Nairobi Summer School for Climate Justice (NSSCJ), this study aims to contribute to the development of effective climate change education and adaptation interventions, particularly for vulnerable populations. The study noted that it is imperative to improve public awareness of the connection between climate change and health, especially among vulnerable populations, to effectively increase public understanding and awareness. To mitigate the health impacts of climate change, the study recommends strengthening policies at all levels to raise public awareness and build capacity. Integrating climate change into public health curricula and practice is crucial to prepare healthcare professionals to address emerging health challenges.

Introduction

Climate change, attributed to global warming, caused by emission of greenhouse gases into the atmosphere poses a significant threat to our human existence with potential to impact lives and livelihood (McGrath 2021). Rising sea levels (increasing by 3.3 millimeters (0.13 inches), increased precipitation, and extreme heat events are associated with global warming leading to disastrous climate induced global events (Ebi 2021). Globally, such extreme weather events are characterized not only by average temperature change and precipitation but also by the type, frequency, duration, and intensity of events such as heat waves, cold spells, storms, floods, and droughts (United States Environmental Protection Agency 2024). Thus, the impact of climate change extends beyond physical damage. It also takes a toll on our health, livelihoods, and the delicate balance of nature (Levin 2019).

Global Impacts of Climate Change

Despite the growing awareness of climate change and its impact on planetary and human health, the knowledge and perceptions of climate change and its nexus with health of humans, animals and environment among young people across Africa has not been fully

elucidated (Trung Thanh Nguyen 2023). Young people constitute most of the Africa's demographic population (Habti 2022), and therefore represent an important constituency for climate change impacts and community resilience in Africa. As the impact of climate change intensifies, it's crucial to understand how different communities, particularly the youth who constitute a significant portion of Africa's population, perceive and experience these changes (Samuel Opoku 2021). It is therefore imperative to gain insights into young people's perception and awareness of climate change, its impacts generally and its intersectionality with health. Understanding young people's perceptions, knowledge, perspectives and interpretations of climate change and its impacts on them, their families and their communities is critical for addressing impacts, adaptation, mitigation and building resilience.

Here, we sought to assess the knowledge and perceptions of climate change and its intersectionality with health among a cross section of young people attending the Nairobi Summer School for Climate Justice in Kenya, June 2024. The Nairobi Summer School for Climate Justice brought 316 number of young People from 52 countries to Kenya for three weeks of mentorship and capacity building. The

Nairobi Summer school provided a unique opportunity to sample a diverse representation of young people from across Africa. A mixed method approach was utilized to assess and gain insights on awareness and perception of climate change in general, impacts on them, and nexus of climate change and health. The result of this study provides a foundational knowledge base that is essential for developing effective strategies to adapt and adjust to the challenges posed by climate change. It will further enable adoption of adaptation and adjustment strategies to combat the health effects of climate change through community ownership.

Methodology

Study Design

The study used a descriptive design, specifically aged 20-35. This age group was selected due to their significant role as key climate actors, actively participating in climate justice movements and influencing future policymaking. Data collection was conducted during the Health Track session at the Nairobi Summer School on Climate Justice (NSSCJ) Cohort IV Academy, utilizing a convenience sampling method.

This approach facilitated effective data

collection from a diverse and relevant sample, although it is important to acknowledge the limitations in representativeness inherent in convenience sampling. The specific context of the NSSCJ likely influenced participants' awareness and perceptions, given their engagement in climate justice. Detailed information was collected through surveys and focus groups, providing a rich data set for analyzing climate change awareness and perceptions within this demographic.

Study Limitation

While this approach provided a solid foundation for subsequent analysis, it is important to acknowledge the limitations in generalizability due to the non-random sampling method. Additionally, the specific context of the NSSCJ may influence participants' responses, potentially introducing bias. Ethical considerations, including informed consent and confidentiality, were strictly adhered to throughout the study. For confidentiality purposes, demographic details (variables) such as gender, age, socioeconomic status and educational level were held at constant to give a harmonious and unbiased richer understanding of the study population.

Study Population

The study population comprised 71 participants recruited from a larger cohort of 316 individuals

who attended the Nairobi Summer School for Climate Justice. (NSSCJ). Participants were selected using a purposive sampling technique to ensure a diverse range of perspectives and experiences. Informed consent was obtained from all participants prior to their inclusion in the study.

Sampling procedure

A descriptive study design was employed to gain a deeper understanding of the awareness and perceptions of climate change and health among young adults aged 20-35 years. This age range was selected due to their active engagement in climate justice initiatives and their potential vulnerability to climate change impacts. To facilitate efficient data collection, a convenience sampling method was utilized during the Health Track sessions of the Nairobi Summer School on Climate Justice (NSSCJ) Cohort IV Academy.

Data Analysis

The study used a mixed methodology approach. The survey collected both quantitative and qualitative data, which were subjected to rigorous analysis. Quantitative data were analyzed using Excel for Data Analysis software, which facilitated the calculation of descriptive statistics and enabled the identification of key trends and patterns. For the qualitative data, Atlas.ti, an artificial

intelligence (AI)-supported qualitative data analysis software, was used to identify recurring themes and deeper insights.

A thematic analysis of qualitative data was done. Qualitative data were using conventional content analysis, which allowed the researchers to systematically categorize and interpret the open-ended responses. A combination of descriptive statistics and thematic analysis ensured a robust interpretation of the findings. Narratives and visual representations such as tables and bar graphs were used to highlight key patterns and themes emerging from the data.

Results

A total of 71 respondents participated in the survey, and all 71 complete datasets were included in the final analysis. Demographic data such as gender, age, socio-economic status, and education were not specifically captured to prioritize the anonymity and convenience of the respondents. This approach allowed participants to focus solely on their awareness and perception of climate change without the influence of personal identifiers.

Consequently, the study provided a more open and inclusive environment where participants were free to express their views, thereby reducing potential bias associated with personal

factors and focusing purely on the collective understanding of the issue.

However, it is important to acknowledge that the exclusion of demographic data limits the ability to perform subgroup analyses and may impact the generalizability of the findings. Additionally, the specific context of the NSSCJ, where participants are likely already engaged in climate justice, may influence the responses. Despite these limitations, this approach provided a holistic view of climate change awareness for the target population without limiting the analysis to specific demographic groups.

Majority of respondents (36%) defined climate change as changes in weather and climate patterns. Seventeen percent attributed it to atmospheric changes, while 12% linked it to human-induced activities. Eleven percent noted that environmental impacts had led to climate change, and 9% believed it was associated with global warming. Only 7% defined climate change as average weather conditions (Figure 1).

Perceptions of Climate Change among Respondents and their Communities

In addition, table 1 below provides a diverse contextual understanding of respondents' perceived effect of climate change's impact in

their communities in five different categories. The responses were based on respondents' personal views of how climate change affects them individually and within their communities. These key effects are summarized as follows in Table 1.

Figure 2 provides a visual representation of the data presented in Table 1. 40% of respondents said climate change has an impact on human health, with 24% specifically mentioning mental health. 23% believed that environmental changes happen due to climate change. 10% attributed climate change's impact to economic and livelihood dynamics, indicating the critical role of environmental factors and social determinants of health in exacerbating climate change's health effects. Only 2% perceived the healthcare system as being insufficiently resilient to address and mitigate climate-related health impacts. This summary is as shown in Figure 2 below.

Discussion

The study assessed the baseline knowledge and perceptions of the climate change among young people attending the Nairobi Summer School for Climate Justice, 2024 at Chuka University. The study analysed responses concerning both the level of awareness of climate change and the perceived effects of climate change within

communities including climate change and planetary health nexus. Based on the result analysis, three key findings emerged from study; first, awareness and perception of climate change varies among respondents with just about 36 % percent of the respondent linking changes in weather and climate patterns, indicating a significant knowledge gap exists among young people in the continent. These results are consistent with other studies that show while most young Africans recognize climate change is happening, they possess low-to-moderate knowledge about its specific scientific causes, such as greenhouse gas emissions (Kulanga et al, 2025; Ogbanga Mina Margaret, 2024; Nyati et al, 2025). This finding of low to moderate knowledge is critical for building climate change resilience in communities across Africa, given the significant role of young people active agents in combating the climate crisis. Nyati et al (2025)) has shown that young people encounter a multifaceted set of barriers, including a significant lack of awareness of climate change processes and institutional frameworks, inadequate access to funding and knowledge resources and a severe reduction in their adaptive capacities. Like Trisos et al., 2022, it is important to emphasise on addressing knowledge gaps to foster a deeper understanding of the complex interplay of

awareness and perceptions which are often attributable to human behavior and activity (Trisos, et al. 2022). Awareness and perceptions factors shape human behavior, influencing our response to the interconnected challenges of climate change.

Second, the awareness and perception of the effects of climate change varied and was diverse, suggesting that respondents diverse lived experiences in their communities played a major role in understanding of the effects of climate change by the respondents. Given the diverse geographical backgrounds of the respondents and climate change effects being a factor of the environment with diverse effects, the diversity of the responses made sense. Interestingly, majority of the respondents associated climate change with effects on health and or health systems. This suggest that health effects of climate change are more severely felt, and the effects usually affects lives as well as livelihood of people and communities. These finding are consistent with the Brookings report by Ellen Chigwanda (2026) that Climate change is presenting serious barriers to educational achievement, impeding children's (especially girls') ability to learn, thrive, and aspire to a brighter future. A narrative review by Watson et al, 2025 of young people's experiences with

climate change also revealed profound adverse effects on young people's mental health. The climate crisis was shown to not only exacerbates acute and chronic existing mental health conditions but also contributes to the development of new mental health problems among young people. Consistent with our focused discussions with young people on this study, their mental health can be affected through direct and/or indirect experiences of climate change, including increased exposure to climate hazards; increased awareness of climate change-related threats without sufficient action from leaders; disruptions to social and cultural practices, socioeconomic, and political conditions; and the exacerbation of structural and environmental inequalities and injustices (Liu et al, 2020; Charlson et al, 2021; Lawrence et al, 2022, 2024; Lau et al, 2024).

Third, Knowledge and awareness of the climate change-health nexus are fundamental to shaping community health and environmental conditions. The study highlights the knowledge gap in understanding the correlation between different age groups' awareness levels and climate change. This gap is crucial for designing targeted interventions based on socioeconomic determinants of health. Climate change, often relying on long-term statistical data, can go

unnoticed by the general public (Osaka 2020).

The study highlights the growing need for individuals to become more aware of the connections between climate change and health, as evidenced by scientific research. (Mithun Karmakar 2020) A lack of understanding of the climate change-health nexus poses a significant health risk, particularly for vulnerable populations. Reframing climate change as a health issue can elevate awareness and understanding (Cardwell FS 2013). Climate change has both immediate and long-term indirect effects on human health. When climate change is presented as a health concern, it is more likely to resonate with a broader audience, potentially influencing changes in perception and awareness (Maibach 2010).

The correlation between knowledge of climate change and awareness of its health effects, as shown in Table 2, emphasizes the importance of addressing this issue. These effects have a growing adverse impact on the general population, especially vulnerable groups.

Analyzing the diverse impacts of climate change on health, including mental health and the exacerbation of underlying conditions, indicates a growing concern about the risk of climate-related health illnesses, particularly for expectant women, children, the elderly, and individuals with respiratory diseases. This

research gap is concerning, especially since human behavior is influenced by perceptions and awareness levels.

Furthermore, knowledge and awareness of climate change and health nexus are the bedrock to social components that shape community health and environmental conditions. It also adds on the foundational knowledge base for understanding how human behavior and activities inarguably contributes to climate change. Climate change, which relies heavily on statistical data compiled over long periods, often goes unnoticed by the general public. Weber suggests that if people were to perceive climate change as a gradual transition from current to future values, based on variables like average temperatures, the risks posed by climate change would seem more familiar (Weber 2015).

A lack of understanding of the climate change-health nexus poses a significant health risk, particularly for vulnerable, marginalized, and remote populations, creating a substantial barrier to behavior change. Thus, reframing climate change as a health issue rather than solely an environmental one could effectively elevate awareness and understanding. When climate change is presented as a health concern, it is more likely to resonate with a broader audience, potentially influencing changes in perception and awareness (Guillaume Chevance

2023).

The concern extends beyond the impact of climate change to the ability of health systems to respond to climate-related illnesses and the growing effect of climate change on social determinants of health. This is further exacerbated by limited research in the Global South on awareness, knowledge gaps, and community-level mitigation strategies (McGrath 2021). Despite the risks, there is limited financing towards research on public awareness and perception of the health impacts associated with climate change (Walker 2024).

Notably, framing climate change as a public health risk can also evoke emotional responses that support climate change mitigation and adaptation efforts, especially when perceived as directly impacting human well-being (Teresa A Myers 2012). However, the lack of awareness of climate change's health impacts at both the community and healthcare system levels, as shown in [Fig 2], underscores the urgent need to inform and educate the public and stakeholders about its associated risks.

The article does emphasize the critical importance of awareness and perception in shaping attitudes and behaviors toward climate change and health. This includes the need for further research and targeted interventions to further enhance awareness of climate change

definitions and their effects on health and the environment.

Over the past five years, only 1% of climate research authors were based in Africa, while 90% were from North America, Europe, or Australia - Global North. This concentration of research in the Global North can skew our understanding of climate change impacts (McGrath 2021).

Limitations to available literature shared and conducted by Global South in comparison to global north is extremely low. (McGrath 2021) This study highlights the varying levels of awareness of the link between climate change and health, particularly between the Global North and the Global South. This is concerning because of the varying health impacts of climate change, particularly in lower-income countries (Rocque RJ 2021).

Therefore, it is crucial to advocate for increased funding for research led by Global South research scientists. To foster equitable research partnerships, we must prioritize local ownership and capacity building in the Global South. Investing in environmental conservation and sustainable practices also contributes to socioeconomic stability and improved livelihoods, ensuring that communities have the resources to access essential healthcare services (Birkmann 2022).

Given the diverse multi-geographical background of the participants, the study further revealed a clear need for a multisectoral educational approach to address the interconnectedness of climate change and health. It is imperative to note that collaborative efforts are essential to mitigate, adapt to, and manage the current and future impacts of climate change on global health security and community resilience.

Conclusion

This article provides refined valuable insights on the current state of awareness and perception of the public in relation to climate change, its general effects and nexus with health. There is a growing need to improve on public awareness of the connection between climate change and health, especially among vulnerable populations to effectively increase public understanding and awareness. From the results shared, there is much room for improvement and work to be done to bridge knowledge void gap to mobilize public support for climate action.

Recommendations

The article underscores the importance of policymakers and public health professionals investing in targeted education and communication campaigns. This fosters a more informed and engaged public, better equipped to

support climate action. Integrating climate change into public health curricula and practice can also prepare health professionals to address emerging health challenges linked to climate change.

The authors further recommend strengthening policies at all levels (national, regional, and local) to address climate change and public health. By emphasizing the link between climate change and human health, we can enhance public awareness and build capacity to respond effectively to a changing climate. Integrating climate change into public health curricula and practice can also prepare healthcare professionals to address emerging health challenges.

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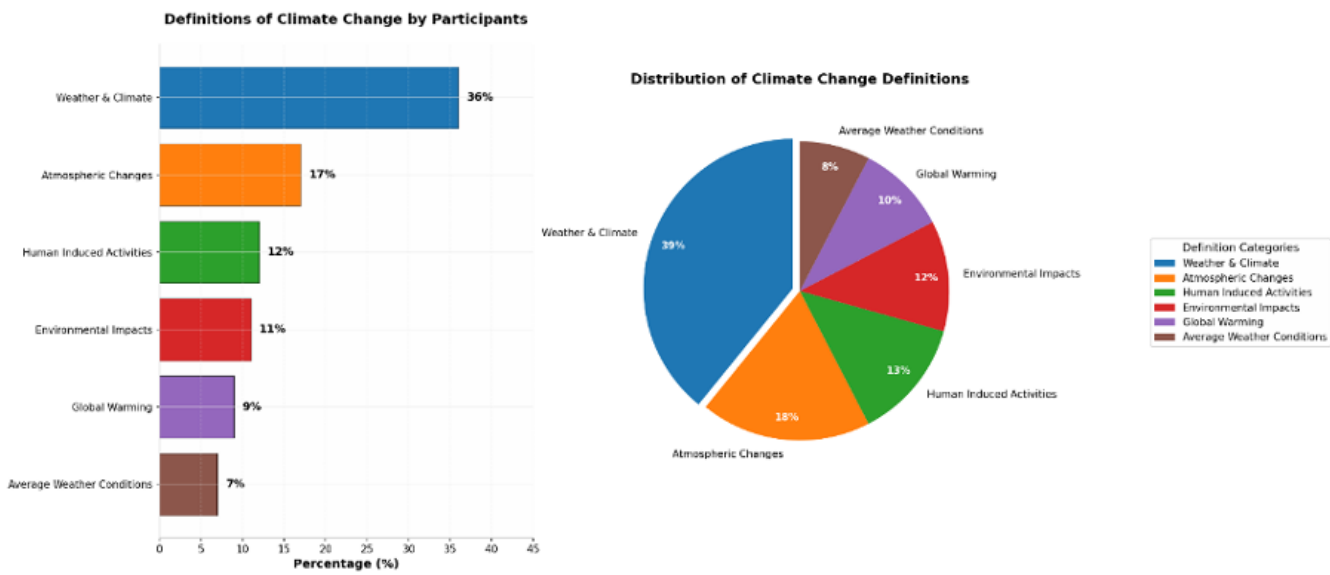


Figure 1: Summarizes the key themes from respondents' definitions of climate change

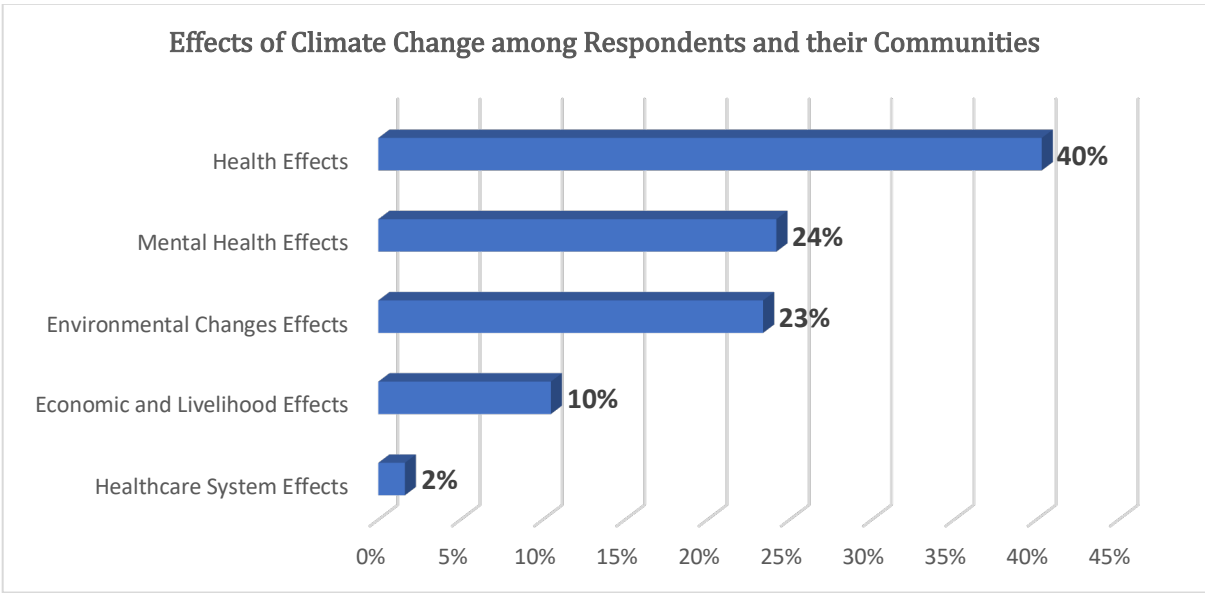


Figure 2: Graphical Representation of Perceived Climate Change Effects Among Respondents in Their Communities

Table 2: Perceived effects of Climate Change Among the respondents

Effect	Effect Description
Health Effects	• Respiratory issues (e.g., asthma, allergies) • Heat-related illnesses (e.g., heat exhaustion, heat stroke) • Increase in specific diseases (e.g., malaria, cholera, TB) • General health decline (e.g., increased mortality) • Increased cases of antimicrobial resistance to antibiotics
Mental Health Effects	• Anxiety and stress • Trauma from disasters (e.g., PTSD, depression) • Mental distress due to livelihood loss
Healthcare System Effects	• Resource strain (e.g., higher patient loads, resource shortages) • Infrastructure damage (e.g., damage from extreme weather events)
Economic and Livelihood Impacts	• Disruption of planting seasons • Loss of livelihoods (e.g., due to droughts, floods) • Hunger and food insecurity
Environmental Changes	• Unpredictable weather patterns • Natural disasters (e.g., droughts, floods) • Environmental pollution

