



Short communication

Towards youth-inclusive strategies for research on climate change and health in sub-saharan Africa

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ARTICLE INFO

Article History:

Received 20 January 2024

Accepted 29 January 2025

Available online 28 March 2025

Keywords:

Youth
Climate change
Health
Research
Africa

ABSTRACT

Globally, young people are effecting significant changes in the field of climate change through various means, such as advocacy, education and awareness campaigns, litigation, innovative solutions, and volunteering. These youth-led initiatives are essential, considering that they will face the long-term health effects of climate change. The need to address disparities in climate and health-related research, policy, and program responses in sub-Saharan Africa (SSA) has never been greater, considering the increasingly pronounced effects of climate change on human health. Within the African continent, where research, policies and programs are predominantly shaped by older people, the inclusion of youth is vital to contribute effectively to the discourse on climate change. In this short communication, we reflect on the limited representation of young people as researchers within the African academy studying the links between climate change and health. We provide a rationale emphasizing the urgent need to build a robust community of researchers that encompasses youth. Our argument advocates for gender-responsive investments in training young researchers in climate change and health to deepen their understanding and address the disproportionate impacts on vulnerable populations. We propose strategies to enhance their meaningful involvement in research and knowledge production in these fields.

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1. Introduction

Climate change is no longer a distant warning but a harsh reality impacting every society. Its devastating effects on low-and-middle-income countries (LMICs), especially those in sub-Saharan Africa (SSA), are evident [1,2]. There is increasing awareness within African countries regarding the impacts of climate change on health [3]. Further, there is an acknowledgement of the importance of deepening comprehension of the climate change and health nexus and effective interventions by deploying interdisciplinary research in several African countries.

The majority of African young people (aged 15–24), and other vulnerable groups such as women, children, and the elderly will face the wrath of climate change due to its impact on water sources, food supply, educational outcomes, and well-being [4–6]. These effects will further be amplified by the already existing poverty, weak health systems, and poor climate-related health governance [7].

With the expanding scientific landscape, there are several opportunities for young people in Africa to actively participate in research on climate change and health. However, Africa is lagging behind in terms of research and innovation, contributing only two per cent of global research outputs and spending a paltry 1.3% on research [8,9]. This may be attributed to several factors, such as African scientists facing low salaries and insufficient funding for essential facilities, infrastructure, and equipment to produce high-quality research [10,11] consistently. Further, there is limited commendation for scientific achievement, particularly in comparison to high-income countries, and outdated gender norms and attitudes towards women in science, technology, engineering, and mathematics (STEM) [12–14]. These factors combined, discourage young people from pursuing meaningful research careers. Yet, the reality is that funding and implementation of evidence-based interventions and policies have the potential to alleviate and mitigate the social and economic impacts of climate change-related health problems. Substantial investment in research plays a crucial role in achieving autonomous sustainability across the African continent [15]. Part of this investment is the importance of building the capacities and capabilities of

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youth as researchers through training and mentorship to study the link between health and climate change in their communities and related knowledge translation [16,17]. A substantial shift from the traditional underinvestment in researchers is required to achieve significant changes.

Fostering a robust community of young researchers will aid in generating evidence on the connections between climate change and health and improve our understanding, particularly regarding vulnerable populations such as older adults, pregnant and postpartum women, neonates, school children, adolescents, industry workers, and residents of informal settlements. This can be achieved through mentoring and research leadership roles for young scientists focusing on gender parity aimed at addressing existing evidence gaps [17]. Building a critical mass of youth researchers, with a deep understanding of local contextual realities will enable the discovery of valuable insights into intersecting experiences of climate change and health at the individual, household, and community levels. Furthermore, it will aid in developing effective strategies, as locally led research will reduce cultural distance and discomfort when discussing sensitive topics with communities.

We argue that research on the link between health and climate change requires researchers with insider knowledge within their communities. Given that the impacts of climate change on health vary within different contexts [18], understanding communities' personal and sensitive narratives requires researchers who are considered culturally competent and local to the settings. These insiders may share socio-cultural characteristics or attributes with the participants, encouraging conversations on sensitive topics [18,19]. Local young researchers may serve as insiders and have an advantage in engaging with both men and women in conversations about the effects of climate change on health and traumatic events. This advantage stems from their knowledge and potential acceptance within the communities. Similarly, involving young people in research on climate change and health can be fruitful, as communities may be more comfortable sharing their personal experiences with peers without fear of judgment or stigma.

We herein propose five (5) strategies for a more inclusive approach to engaging youth to contribute to research on the impacts of climate change on health. These are: (1) investing in the integration of climate change in health curricula; (2) increasing pathways to youth involvement in climate change and health research; (3) provision of leadership opportunities for youth on climate change and health; (4) leveraging youth to disseminate research findings on climate change and health; and (5) promoting training of youth in intersectoral actions to address issues at the intersection of climate change and health.

2. Approaches to youth leadership in climate change and health research

2.1. Invest in curricula reforms, training, and mentorship on climate change and health

Africa has increasingly experienced severe weather events, with devastating floods and droughts causing widespread destruction and deepening the vulnerability of many communities. The topic of sustainability of climate change action, is being integrated into curricula worldwide across various degree programs [20,21]. In Africa, integration of climate change and health into the curricula also needs to be front and center, enabling educators and researchers to work alongside young graduates to contribute to creating a sustainable and healthy Africa. Governments and development partners should reevaluate their budgets to foster greater engagement from experienced professionals and generate interest among youth. By prioritizing this measure, we can tap into the potential of qualified individuals, empower them to contribute to the field, and ultimately

work towards combating the impacts of climate change on health. In the long term, this will also ultimately empower and improve the agency of youth in making informed decisions and advocating for policies and programs that protect their communities' health, and the environment.

2.2. Increase pathways to youth leadership in climate change and health research

Despite being qualified, two-thirds of Africa's youth are unemployed or engaged in vulnerable employment [22]. Each year, 12 million young people enter the workforce, while only 3 million jobs are created annually [22]. This presents an opportunity for governments to develop new roles for unemployed youth and contribute towards pan-African research outputs. By redistributing funding and providing greater professional options for young scientists, African communities can nurture a generation fit to battle the climate change and health crisis and achieve more autonomy than current leaders. Development agencies in partnership with governments could also prioritize the education and training of emerging professionals on climate change and health and support the allocation of research funding to study climate change and health.

It is imperative that policymakers, practitioners, and all stakeholders in Africa are accountable for their capacity to influence the future of their communities regarding climate change and health. They should actively engage with the current generation of young leaders in the professional discourse on climate change and health research. A good example is the young Kenyan environmentalist and climate change activist Elizabeth Wanjiru Wathuti, whose work we acknowledge and applaud and a Swedish activist Greta Thunberg, who, at just 16 years old, addressed world leaders at the United Nations Climate Action Summit [23]. African countries could greatly benefit from creating physical and virtual spaces where young people can connect with role models and mentors who can help develop their careers in climate change and health research. Promoting youth leadership and mentorship in climate change research is crucial for promoting intergenerational sharing, innovative ideas, and cultivating a strong commitment to action by enabling the generation most directly impacted by climate change to shape solutions and policies.

2.3. Leverage youth to disseminate research findings on climate change and health

Fundamentally, Generation Z is the first group in history to grow up in a predominantly digital world [24]. Generation Z are those born between 1997 and 2012 for whom technology has been an integral part of their lives [25]. In Africa, those privileged with access to a stable internet connection and mobile devices can consume, create, and disseminate important information about the global climate change crisis efficiently. However, there is a significant knowledge gap between rural and urban communities regarding climate change. Technologically fluent youth have constant access to up-to-date information on the topic, primarily through social media platforms. Social Media serves as an open space for informed organizations, activists, and global scientists to reach a worldwide audience and collaborate with other activists, influencers, and academic institutions [26]. Social media creates an opportunity for African youth to collaborate, raise awareness, and secure funding for climate change and health projects within their communities. Despite a relatively low percentage of people having access to a stable internet connection, approximately 46 % of people in Sub-Saharan Africa own a mobile phone [27]. Among mobile internet users, WhatsApp accounts for roughly 44 % of all mobile internet use [27]. This may seem like a small number, but WhatsApp serves as a substantial medium to share links, videos, and information among people in Africa. Involving youth in research dissemination enhances awareness of climate and health

issues in diverse communities and fosters a generation capable of driving grassroots action and influencing policy change across the continent.

2.4. Promote training of youth in intersectoral actions to address climate change

Climate change is recognized as a social determinant of health and therefore cannot be addressed solely from a single sectoral lens [28]. As such intersectoral actions relevant to integrating climate change as a social determinant of health targeted at youth are essential, particularly in the areas of climate protection, climate sustainability, and green economy and contribute to adaptation and mitigation policies at local and national levels [29]. We posit that training and empowering the youth in climate research, focusing on key areas such as early weather warnings, and developing resilient infrastructure can address this gap. Youth could be granted opportunities to conduct research beyond climate change and health to focus on climate-resilient agricultural practices, natural barriers, and advanced water management systems to help communities better prepare for and mitigate the impacts of extreme weather. Further, training the youth in sustainable land use planning, afforestation projects, and energy-efficient technologies has the potential to equip them to contribute to long-term climate solutions. Training youth in research and leadership within the Circular and Blue Economy is vital for both environmental sustainability and job creation. The circular economy, which focuses on recycling and reusing waste to reduce pollution and conserve resources, offers a significant opportunity for youth to lead in mitigating climate change and supporting clean energy initiatives. Through broader intersectoral actions, young people can drive innovation in areas such as food production, technology, and industry while addressing the growing waste problem in Sub-Saharan Africa. This approach not only protects the environment but also creates labor-intensive jobs, positioning youth as key players in the transition to a sustainable future.

3. Conclusion

Our purpose in this short communication was to highlight the gaps that exist in climate and health research, particularly the underutilization of youth in Africa, who hold immense potential to drive meaningful change. Harnessing the continent's young talent to spur research will sustainably expand the research capacities and capabilities and guide the formulation of evidence-based and contextual interventions. Further, beyond these, governments and development partners must be intentional in ensuring the meaningful participation of youth in actual research through grants, and support youth to disseminate and influence policy and practice related to climate change and health based on their research. We emphasized the importance of national governments prioritizing integration of climate change as a social determinant of health and promoting the training and involvement of youth in critical areas of intersectoral action such as early weather warning systems, climate-resilient agriculture, the Circular and Blue Economy, and sustainable land use planning. We conclude that greater financial investments in youth education and research on climate change and health are required to increase the number of young people conducting research in this area. Youth are a uniquely untapped resource in reorienting action towards climate change and health through research in Africa, thereby catalyzing progress towards a sustainable future.

Funding

The authors received no funding to write this short communication.

Declaration of competing interest

All four authors declare that they have no competing financial interests or personal relationships that could have a bearing to the work reported in this paper.

CRediT authorship contribution statement

Adelaide M Lusambili: Conceptualization, Writing – original draft, Writing – review & editing, Visualization, Validation. **Kizito L Muchanga:** Writing – review & editing, Visualization, Validation. **Laurie Maria Vusolo:** Conceptualization, Writing – original draft, Writing – review & editing, Visualization, Validation. **Constance S Shumba:** Writing – review & editing, Visualization, Validation.

Acknowledgments

N/A

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