

(SHORT COMMUNICATION)



The brunt of climate change on primary health care in Africa: Case study of a HASUWEB framework in Cameroon

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Abstract

The evidence from literature demonstrates how vulnerable people are to the major and impending threat of climate change (CC). Due to weaker health systems, populations in African nations are more susceptible to harmful consequences, and the balance of effects on health is unfavorable, necessitating more attention and efficient solutions. It is crucial to evaluate the potential health risks brought on by climate variations, such as heat stress, air pollution, waterborne disease, and vector-borne disease. In the past few years, there have been increasing publications about the CC issue in Cameroon. However, few publications emphasize the impact on health; specifically, primary health care (PHC). The quest for global health security can only be accomplished against the scenery of a united mainstreaming of CC response into the public health apparatus, especially in Africa and Cameroon in particular. This is in addition to acknowledging the myriad ways in which CC has an impact on PHC during COVID-19 pandemic and the recent monkeypox multi-country outbreak. In this paper, we highlight this global public health gap and elaborate on its implications using the HASUWEB framework (H: Harsh weather, A: Air pollution, S: Shifts in Vector Ecology, U: Upsurge of Allergens, W: Water and Food; Quality and Supply Impacts, E: Environmental Degradation, B: Bitter end Heat). We also provide recommendations for policy-makers to ensure an effective PHC-CC crisis nexus now and in the future.

Keywords: Climate Change; Primary Health Care; Cameroon; Africa; Health Security

1. Introduction

Many communicable diseases are climate-sensitive and it is estimated that between 2030 and 2050, climate change (CC) is expected to cause 250,000 additional deaths per year from malaria, diarrhea, malnutrition, and heat stress alone [1]. CC is impacting primary health care (PHC) in several ways, including, increases in zoonotic diseases as well as food, water- and vector-borne diseases [2]. Furthermore, CC is eroding some social determinants for good health, such as creating inequality and access to health care, poor livelihoods, and inappropriate social support structures [3]. Areas with weak PHC infrastructure – mostly in Africa including Cameroon – will be the least able to cope if necessary measures are not put in place. Cameroon has a three-level model of health systems; the central, intermediate, and peripheral levels [4]. The peripheral level emulates the World Health Organization (WHO's) PHC health district (HD) model and comprises 5284 health areas and 189 HDs [5]. Like in many other African countries, there is insufficient and/or limited data of evidence on the impact of CC on PHC in Cameroon. CC seems not to be a priority for the Government of Cameroon [6]. Also, solid socio-political commitment to CC is limited and there is currently no capacity within the Cameroon Ministry of Public Health to mainstream CC across other health programmes. However, three times a month, the National Observatory for CC in Cameroon, publishes climate information detailing floods, higher

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temperatures, or other conditions across the country [7], even though there is need for this information to be widely disseminated across the country. Given that PHC should be the entry point for the Cameroonian population's interaction with the health systems, it is alarming that ongoing efforts to revitalize PHC fail to adequately consider climate action, both in terms of mitigation/adaptation. In this paper, we examine this global public health gap, elaborating on its implications on Cameroon from a HASUWEB framework (H: Harsh weather, A: Air pollution, S: Shifts in Vector Ecology, U: Upsurge of allergens, W: Water and food; quality and supply impacts, E: Environmental Degradation, B: Bitter end Heat); offering recommendations for policy-makers to ensure effective PHC-CC crisis nexus now and in the future in Africa and particularly in Cameroon.

2. Impact of Climate change on primary health care in Cameroon and Africa at large; HASUWEB framework

There are numerous theories developed to explain the relationship between CC and infectious diseases [8]: they include higher proliferation and reproduction rates at higher temperatures, extended transmission season, changes in ecological balances, and climate-related migration of vectors, reservoir hosts, or human populations. Unleashing the brunt of CC on PHC in Africa with case study of a 'HASUWEB' framework in Cameroon is of utmost importance. Also, recognizing the multifarious influence of CC on PHC, amidst COVID-19 pandemic, 2022 Ebola outbreak in Uganda, and multi-country monkey pox outbreak, the quest for global health security (1) can only be achieved against the scenery of concerted mainstreaming of CC response into the public health systems apparatus in Africa including Cameroon. Below are highlights of the HASUWEB framework in terms of its implications for PHC.

2.1. H: Harsh weather

Injuries, fatalities and mental health are impacted by harsh weather caused by CC [1]. Average temperatures in Cameroon have been rising since 1940; with a net increase of 0.95°C between 1930 and 1995 and even more as of 2020 as a result of the changes linked to extreme weather conditions across the country [9]. CC and related disasters cause anxiety-related issues as well as chronic and severe mental health disorders [1]. The trauma and losses from a disaster, such as losing a home or job and being disconnected from a community, can contribute to depression and anxiety [10]. Harsh weather events have also been associated with increases in aggressive behavior and domestic violence [2]. Exposure to extreme heat like in the economic capital of Cameroon -Douala may lead to increased use of alcohol to cope with stress, increases in hospital admissions for people with mental health or psychiatric conditions, and suicide.

2.2. A: Air pollution

A key component of smog (Ground-level ozone) is associated with many health problems, such as diminished lung function, increased hospital admissions and emergency room visits for asthma, cardiovascular disease, and increases in premature deaths [11]. Air pollution threatens the essential ingredients of good health – clean air, safe drinking water, nutritious food supply, and safe shelter – and has the potential to undermine decades of progress in global health. Unfortunately, studies are yet to be established to show these clear demerits of air pollution on morbidity and mortality of diseases in Cameroon.

2.3. S: Shifts in Vector Ecology

Diseases like Malaria, dengue, encephalitis, hantavirus, rift valley fever, Lyme disease, chikungunya, West Nile virus are influenced by CC and burden the PHC systems in Africa [12]. Seasonal change in the incidence of infectious diseases is a common phenomenon in both temperate and tropical climates. There are some widely cited examples suggesting that CC has already resulted in the introduction of certain infectious diseases into previously unaffected geographic areas and as such disease-carrying vectors may adapt to changes in temperature by changing geographical distribution [13,14]. An emergence of malaria in the cooler climates of African highlands may be a result of the mosquito vector shifting habitats to cope with increased ambient air temperatures [15].

2.4. U: Upsurge of allergens

CC causes some allergen-producing plants to move into new areas, and winds can carry pollen and mold across Africa [15]. Respiratory allergies and asthma are partly stimulated by an upsurge of allergens caused by changes in climate [1]. These changes in temperatures cause an increase in the concentration of pollen in the air, the strength of airborne allergens, and an increase in allergy symptoms. Exposure to stronger amounts of pollen and mold may make people that do not currently have allergies develop allergic symptoms [2]. Pollen exposure can trigger various allergic reactions, including symptoms of hay fever. Still, there is a gap to fill in Cameroon as regards establishing the impact of the upsurge of allergens on PHC.

2.5. W: Water, food quality, and supply impacts

Cholera, cryptosporidiosis, campylobacter, leptospirosis, and harmful algal blooms are partly because of the CC impacts on water, food quality, and supply [2]. In Cameroon, there have been recurrent outbreaks of Cholera eventhough the outbreaks are still to be established clearly whether or not they are caused by CC. CC impact assessment on health in the west and the center region of Cameroon by United Nations Development Programme Country Study in 2016 revealed that the burden of infectious diseases like cholera, yellow fever, and malaria was high in those regions [16]. In general, diarrheal diseases, including salmonellosis and campylobacteriosis, are more common when temperatures are higher, though patterns differ by place and pathogen.

2.6. E: Environmental Degradation

Forced migration, civil conflict, and mental health impacts results partly from environmental degradation caused by CC [17]. In Cameroon, the Northern Sudano-Sahelian region is experiencing increased incidences of drought and desert advancement that have scorched large expanses of land, whilst the Southwest coastal and South eastern equatorial rainforest regions have experienced increased periods of prolonged rainfall that have led to flooding (18). Following disasters, mental health problems increase, both among people with no history of mental illness, and those at risk.

2.7. B: Bitter end Heat

Heat-related illnesses; cardiovascular failure and death are enhanced by bitter end heat (extreme heat events) [1]. Temperature extremes most directly affect health by compromising the body's ability to regulate its internal temperature and loss of internal temperature control can result in various illnesses, including heat cramps, heat exhaustion, heatstroke, and hyperthermia [2]. These phenomena still need to be established clearly in Cameroon while relating to their impact on PHC. Eventhough the Cameroon Ministry of Public Health is yet to tackle the impact of CC on health care delivery, a study conducted to assess the impact of CC in the North and Southwest of Cameroon among indigenous women showed high evidence that they are directly exposed to the heat wave, shortage of food, and clean water, including vector-borne diseases [16]. Also in a study to describe the environmental condition in schools and to evaluate the impact of heat on the schoolchildren's health during school days in Cameroon cities of Yaoundé and Douala, a significant correlation between daily indoor temperature and the percentages of schoolchildren who felt very hot and had fatigue and headaches in Yaoundé was established [19]

3. Conclusion

Addressing the health impacts of CC requires integration of public health and CC knowledge. In particular, there is a need for a more strategic communication approach to those at risk and those who can play a part in enhancing adaptability. Primary health care is not easy. It demands more than sitting quietly behind a desk or seeing patients in a comfortable consulting room. Also, literature on CC measurement of PHC performance in conflict-affected and fragile situations is sparse. The early impact of CC on the health systems which is to serve as evidence by Multi-stakeholders in the African region and Cameroon's warning systems for outbreaks of emerging and re-emerging infectious diseases are acknowledged as not fully operational. This is due to the lack of expertise in terms of trained personnel and resources to tackle the brunt of CC on PHC. In this context, it is necessary to; revise existing Cameroon National health security plans to include a robust and context-specific situational analysis of the climate landscape and its health implications, thus designing PHC-based approaches to address the gaps. Moreover, a set of recommendations would need to be considered to bridge the gap of the brunt of CC on PHC in Cameroon and Africa at large. This will include creating collaborations with the commercial sector, Non-governmental Organizations, universities, and international organizations to address the health effects of climate change throughout Africa, including Cameroon in a more effective way. Also, enhancing the improvement of PHC-based strategies across interventions for the climate catastrophe in health budget allocations needs to be established while leveraging Cameroon's top decision-makers access to information on disease risks, mitigation strategies and occurrence as well as environmental circumstances related to CC. Furthermore, the National Observatory of Cameroon via the ministry of Public Health needs to improve research that generates and comprehends scientific data to better understand the connection between CC and health outcomes. Equally, supporting the creation of a health workforce by ensuring the education of a new generation of knowledgeable, experienced public health professionals to address the health concerns posed by CC is crucial. We have to begin and expand capability for modeling and predicting potential impacts on Cameroon's health, that is related to the climate and ensure that the preservation of human health from the effects of CC is given the proper leadership among local and national governments. Last but not least, there is hope for the future in the fight against CC as there was an agreement on historic climate "loss and damage" fund during COP27 summit in Egypt. This final agreement marks the first time countries and groups, including longtime holdouts like the European Union and the United States of America have agreed to establish a fund for nations vulnerable to climate disasters made worse by pollution disproportionately

produced by wealthy, industrialized nations. More initiatives need to be supported in order to accelerate the less use of fossil fuels and thus reduce greenhouse gas emissions that contribute to global warming. The COP27 accord as a whole, of which the fund is a part, also reiterated the unique goal that global warming be kept to 1.5 degrees Celsius over pre-industrial levels.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare that there is no conflict of interest.

Disclaimer

The views and opinions expressed in this short communication are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

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