

# The Role of Physical Activity in Preventing Hypertension among East African Populations: Public Health Interventions

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## ABSTRACT

Hypertension is a leading contributor to cardiovascular morbidity and mortality globally, with East African populations experiencing a significant rise in prevalence due to rapid urbanization, sedentary lifestyles, and dietary transitions. This review explores the pivotal role of physical activity in the prevention and management of hypertension within East African contexts. It examines the epidemiological trends of hypertension, the biological mechanisms through which physical activity regulates blood pressure, and the public health interventions currently employed to promote active living. Despite the proven benefits of physical activity, challenges such as inadequate infrastructure, cultural perceptions, socioeconomic barriers, and limited policy implementation hinder widespread adoption. The review highlights successful strategies from countries like Rwanda, Ethiopia, and Kenya, demonstrating how community engagement, school-based programs, urban planning, and healthcare integration can foster a culture of physical activity. Recommendations emphasize the need for culturally tailored, multisectoral, and equity-driven approaches to enhance physical activity and curb the hypertension epidemic. By bridging the gap between awareness and practice, this review underscores the urgency of incorporating physical activity into public health agendas to improve cardiovascular outcomes across East Africa.

**Keywords:** Hypertension, Physical activity, Non-communicable diseases (NCDs), East Africa, Urbanization

## INTRODUCTION

Hypertension, also referred to as high blood pressure, is a leading risk factor for cardiovascular diseases (CVDs) and a significant contributor to premature mortality worldwide [1]. Globally, it is estimated that more than 1.28 billion adults aged 30–79 years have hypertension, with the majority living in low- and middle-income countries (LMICs) [2]. In East Africa, the prevalence of hypertension is on a sharp rise, driven largely by rapid urbanization, changes in dietary patterns, increasing stress levels, and declining physical activity [3]. The epidemiological transition in the region has shifted the disease burden from predominantly communicable diseases to a dual burden that includes a growing incidence of non-communicable diseases (NCDs), such as hypertension, diabetes, and obesity [4].

The World Health Organization (WHO) recognizes insufficient physical activity as one of the four main behavioral risk factors contributing to NCDs [5]. Physical inactivity is responsible for approximately 6% of the global burden of disease and has been directly linked to the development and progression of hypertension. Regular physical activity has been shown to lower blood pressure, improve heart health, and reduce the risk of hypertension-related complications such as stroke, kidney disease, and myocardial infarction. It is therefore a critical and cost-effective public health intervention for the prevention and management of hypertension.

Historically, East African populations have engaged in physically demanding daily routines, often involving agriculture, walking long distances, and manual labor. However, in recent decades, there has been a noticeable shift toward sedentary lifestyles, especially in urban settings [6]. Urbanization has brought about conveniences such as public transportation, motorized vehicles, increased screen time, and office-based employment, which collectively reduce physical exertion. Concurrently, the adoption of Western diets high in fats, sugars, and salt has compounded the problem, further increasing the risk of hypertension [7].

Despite the known benefits of physical activity, public awareness, infrastructure, and supportive policies promoting active lifestyles remain limited in many parts of East Africa. Interventions that encourage active transport (such as

walking and cycling), provide access to recreational spaces, and integrate physical education into schools and workplaces are urgently needed [8]. Moreover, health promotion campaigns should be culturally sensitive and tailored to different socioeconomic groups to be effective. This study aims to investigate the role of physical activity in preventing and managing hypertension in East Africa. By understanding current activity levels, identifying barriers to physical activity, and evaluating the impact of various interventions, policymakers and stakeholders can design targeted strategies to combat this growing public health threat.

Hypertension is increasingly becoming a silent epidemic in East Africa. Unlike communicable diseases that often present with obvious symptoms, hypertension frequently goes undetected until serious complications arise [9]. Many individuals remain unaware of their hypertensive status due to the lack of regular health screenings, inadequate health education, and weak health systems. The growing incidence of hypertension in the region is closely tied to shifts in lifestyle behaviors, particularly reduced physical activity due to urbanization and modernization [10].

Despite the clear link between physical inactivity and hypertension, physical activity is often neglected in public health planning. In urban areas, inadequate infrastructure, such as poor sidewalks, lack of bicycle lanes, and limited green spaces, deters individuals from engaging in outdoor physical activities. Furthermore, sedentary occupations and increased reliance on technology have minimized the need for physical exertion. In rural areas, although physical activity may be more prevalent, awareness regarding its health benefits remains low [11].

There is a critical need to bridge the gap between knowledge and practice. Although physical activity is a recognized intervention for hypertension prevention and management, implementation of physical activity-promoting strategies is inconsistent across East Africa. There is also a lack of context-specific research that explores the attitudes, perceptions, and structural barriers that influence physical activity behavior in the region [12].

This study aims to assess the prevalence of physical inactivity among adults in selected East African populations, determine the relationship between physical activity levels and hypertension incidence, explore barriers and facilitators to regular physical activity, evaluate existing public health interventions and policies promoting physical activity as a tool for hypertension prevention and management, and provide evidence-based recommendations for enhancing physical activity promotion strategies in East African contexts. The research questions include understanding the current level of physical activity among adults, how physical inactivity contributes to hypertension prevalence and progression, social, economic, and environmental factors influencing physical activity behaviors, and strategies and interventions implemented to promote physical activity. The study holds significant value in advancing public health knowledge and practice in East Africa, as it highlights the urgent need to address physical inactivity as a modifiable risk factor for hypertension and other chronic diseases. The study will generate empirical data that can inform health policies and programs integrating physical activity into everyday life, such as urban planning, community-based fitness programs, and physical education in schools and workplaces. The findings will be of interest to various stakeholders, including public health professionals, policymakers, educators, urban planners, and community leaders, as they can catalyze multi-sectoral efforts to combat hypertension and foster a culture of health and well-being across East Africa.

### **Epidemiology of Hypertension in East Africa**

Hypertension, often referred to as the "silent killer," is a pressing public health challenge in East Africa, with prevalence rates ranging between 20% and 30% among adults. A significant proportion of these cases remain undiagnosed, untreated, or poorly controlled, contributing to high morbidity and mortality from cardiovascular and renal diseases [13]. Sociodemographic factors influence hypertension prevalence, with urban areas showing higher prevalence rates than rural areas. Age is another critical determinant, with the risk increasing with age, particularly among individuals aged 45 years and above. Gender differences also exist, with women showing slightly higher rates of hypertension than men, especially in older age groups. Socioeconomic status plays a complex role in hypertension risk, with higher-income groups having better access to healthcare services but engaging in more sedentary behaviors and consuming less healthy diets [14]. Urbanization is a powerful driver of the hypertension epidemic in East Africa, as people migrate to cities for better opportunities and lifestyle shifts, leading to a decline in physical activity levels. Physical inactivity has been consistently associated with elevated blood pressure. A low level of awareness and diagnosis of hypertension in East Africa underscores the need for urgent and coordinated public health interventions. Addressing modifiable lifestyle risk factors, particularly physical inactivity, is crucial for hypertension prevention strategies. Policies promoting physical activity, such as safe walking and cycling paths, community-based exercise programs, and incorporating physical activity into school and workplace routines, can play a pivotal role. Mass media campaigns to raise awareness about hypertension and its link to sedentary behavior can help shift public attitudes and encourage behavior change [15].

### **Biological Mechanisms Linking Physical Activity to Blood Pressure Regulation**

Regular physical activity has been shown to have beneficial effects on cardiovascular health, particularly through its capacity to lower and regulate blood pressure. This effect is mediated through a combination of biological mechanisms that influence vascular function, neural control, metabolic health, and structural properties of blood

vessels [16]. Understanding these mechanisms is essential in framing physical activity as a non-pharmacological intervention for hypertension prevention and management. Recent aerobic exercise enhances endothelial function by increasing the production and bioavailability of nitric oxide (NO), a potent vasodilator. This effect is especially beneficial in individuals with hypertension, where endothelial dysfunction and impaired NO signaling are common. Regular exercise also reduces systemic vascular resistance, decreases sympathetic nervous system activity, and improves insulin sensitivity. Aerobic exercise, particularly endurance training, has demonstrated the most consistent blood pressure-lowering effects, reducing systolic blood pressure by 5-10 mmHg and diastolic pressure by 3-7 mmHg in both hypertensive and prehypertensive individuals [17].

### **Current Public Health Interventions in East Africa**

East Africa has been implementing public health interventions to combat non-communicable diseases (NCDs), including hypertension. These interventions are influenced by the region's unique socioeconomic, cultural, and infrastructural landscapes. Community-based programs, such as Uganda's "Healthy Heart Africa" initiative, focus on promoting physical activity through accessible, low-cost approaches [18]. Schools and workplaces are also integrating structured physical activity components to instill healthy habits. Workplace wellness programs encourage employees to participate in on-site fitness classes and walking breaks. Mass media campaigns, such as radio campaigns and mobile phone-based messaging, have also been used to disseminate information on the health benefits of physical activity. Policy and urban planning interventions are also being considered. Countries like Kenya and Ethiopia have integrated physical activity promotion into national NCD action plans, while urban planning for active living is underway. However, challenges such as traffic congestion, insecurity, air pollution, and lack of land-use planning continue to deter outdoor physical activity [19].

### **Barriers to Physical Activity in East African Contexts**

Physical activity in East African communities is hindered by cultural, infrastructural, economic, and social barriers. Cultural perceptions and attitudes towards exercise, infrastructure limitations, time constraints, gender norms, safety concerns, and economic constraints limit physical activity [20]. Older adults and rural populations often view exercise as unnecessary or inappropriate, while urbanization and modernization often valorize sedentary lifestyles. Infrastructure deficiencies, time constraints, gender norms, and safety concerns also limit physical activity. Women and girls face criticism, harassment, and social judgment for participating in physical activities, while economic constraints limit access to structured physical activity options. Governments and stakeholders must invest in low-cost, scalable solutions targeting underserved populations. A multi-sectoral, culturally grounded, and equity-focused approach is needed to overcome these barriers and unlock the full potential of physical activity as a powerful tool for preventing and controlling non-communicable diseases like hypertension [21].

### **Recommended Interventions, Success Stories, and Lessons Learnt**

Several East African countries have demonstrated promising strategies in promoting physical activity to combat hypertension, offering valuable lessons for future interventions. In Rwanda, government-led initiatives such as community-wide physical activity days have significantly enhanced public participation and awareness, fostering a culture of regular exercise [22]. Ethiopia has successfully integrated physical activity promotion into its primary healthcare system by including it in routine screening processes, which has improved early engagement and health literacy around hypertension prevention. Meanwhile, Kenya's collaboration with the World Health Organization (WHO) in urban planning efforts underscores the importance of multisectoral partnerships in creating environments that facilitate active lifestyles. Building on these successes, future interventions should prioritize the integration of physical activity counseling and screening into primary healthcare to reach broader populations. Strengthening school curricula by ensuring consistent implementation of physical education will instill lifelong habits of activity among children and adolescents. Additionally, increased investment in infrastructure such as sidewalks, recreational parks, and bike paths is essential to support safe and accessible active transportation. Community engagement strategies should incorporate culturally relevant messaging and local champions to encourage grassroots participation [23]. Lastly, robust monitoring and evaluation systems are critical to track program participation, assess health outcomes, and determine cost-effectiveness, which can guide policy adjustments and resource allocation. Together, these approaches form a comprehensive framework for enhancing physical activity in East Africa, ultimately reducing the burden of hypertension and promoting long-term public health resilience.

### **CONCLUSION**

The increasing burden of hypertension in East Africa necessitates a proactive approach that prioritizes physical activity as a key prevention and management strategy. Physical inactivity is a significant risk factor, contributing to the rise of hypertension due to rapid urbanization, lifestyle changes, and limited awareness. Integrating regular physical activity into daily life through public health campaigns, school curricula, healthcare settings, and urban infrastructure holds immense potential. Successful initiatives in Rwanda, Ethiopia, and Kenya demonstrate how government leadership, multisectoral collaboration, and culturally tailored strategies can lead to healthier communities. However, challenges like poor infrastructure, gender norms, safety concerns, and limited health literacy persist. Overcoming these barriers requires sustained political will, community involvement, and targeted

investments in active living environments. Policy efforts should focus on integrating physical activity into routine healthcare, enhancing school-based education, expanding access to safe recreational spaces, and establishing robust monitoring systems.

## REFERENCES

1. Alum, E. U. Role of phytochemicals in cardiovascular disease management: Insights into mechanisms, efficacy, and clinical application. *Phytomedicine Plus*, 2025; 5(1),100695. <https://doi.org/10.1016/j.phyplu.2024.100695>.
2. Chang, H., Hawley, N.L., Kalyesubula, R., Siddharthan, T., Checkley, W., Knauf, F., Rabin, T.L.: Challenges to hypertension and diabetes management in rural Uganda: a qualitative study with patients, village health team members, and health care professionals. *International Journal for Equity in Health*. 18, 38 (2019). <https://doi.org/10.1186/s12939-019-0934-1>
3. Mills, K.T., Stefanescu, A., He, J.: The global epidemiology of hypertension. *Nat Rev Nephrol*. 16, 223–237 (2020). <https://doi.org/10.1038/s41581-019-0244-2>
4. Juma, K., Juma, P.A., Shumba, C., Otieno, P., Asiki, G., Juma, K., Juma, P.A., Shumba, C., Otieno, P., Asiki, G.: Non-Communicable Diseases and Urbanization in African Cities: A Narrative Review. Presented at the November 15 (2019)
5. Konkor, I., Kuire, V.Z.: Epidemiologic transition and the double burden of disease in Ghana: What do we know at the neighborhood level? *PLoS One*. 18, e0281639 (2023). <https://doi.org/10.1371/journal.pone.0281639>
6. Noncommunicable diseases, <https://www.who.int/health-topics/noncommunicable-diseases>
7. Goyal, J., Rakhra, G.: Sedentarism and Chronic Health Problems. *Korean J Fam Med*. 45, 239–257 (2024). <https://doi.org/10.4082/kjfm.24.0099>
8. Clemente-Suárez, V.J., Beltrán-Velasco, A.I., Redondo-Flórez, L., Martín-Rodríguez, A., Tornero-Aguilera, J.F.: Global Impacts of Western Diet and Its Effects on Metabolism and Health: A Narrative Review. *Nutrients*. 15, 2749 (2023). <https://doi.org/10.3390/nu15122749>
9. Adonu C. C, Ugwu O. P. C, Bawa A, Ossai E. C, Nwaka A.C (2013). Intrinsic blood coagulation studies in patients suffering from both diabetes and hypertension. *Int Journal of Pharmaceutical Medicine and Bio Science*, 2 (2), 36–45.
10. Aja, P. M., Nwuguru, M. E., Okorie, U. C., Alum, E. U. and Offor, C. E. Effect of Decoction Extract of *Whitfieldia lateritia* on Lipid Profiles in Hypercholesterolemic Albino Rats. *Global Veterinaria*, 2015; 14(3): 448–452. DOI: 10.5829/idosi.gv.2015.14.03.93130.
11. Sorato, M.M., Davari, M., Kebriaeezadeh, A., Sarrafzadegan, N., Shibru, T., Fatemi, B.: Reasons for poor blood pressure control in Eastern Sub-Saharan Africa: looking into 4P's (primary care, professional, patient, and public health policy) for improving blood pressure control: a scoping review. *BMC Cardiovascular Disorders*. 21, 123 (2021). <https://doi.org/10.1186/s12872-021-01934-6>
12. Woessner, M.N., Tacey, A., Levinger-Limor, A., Parker, A.G., Levinger, P., Levinger, I.: The Evolution of Technology and Physical Inactivity: The Good, the Bad, and the Way Forward. *Front Public Health*. 9, 655491 (2021). <https://doi.org/10.3389/fpubh.2021.655491>
13. Afam, G., Nakalega, A.P.: Hypertension risk perception among young adults in Victoria University Kampala Uganda. *Int J Cardiol Cardiovasc Risk Prev*. 23, 200327 (2024). <https://doi.org/10.1016/j.ijcrp.2024.200327>
14. Kovesdy, C.P.: Epidemiology of chronic kidney disease: an update 2022. *Kidney Int Suppl* (2011). 12, 7–11 (2022). <https://doi.org/10.1016/j.kisu.2021.11.003>
15. Mohamed F. Y. M, Selim T, Hussein H M, Hassan A A A, Said A A, Said M S, Abdirahman K M, Saadaq A. H., Ishak A. A., Mohamed AM A. (2024). Exploring the prevalence, clinical spectrum, and determinants of uncontrolled hypertension in the emergency department: Insights from a hospital-based study in Somalia. *Current Problems in Cardiology*, 102589. <https://doi.org/10.1016/j.cpcardi.2024.102589>.
16. Braver, N.R. den, Bengoechea, E.G., Messing, S., Kelly, L., Schoonmade, L.J., Volf, K., Zukowska, J., Gelius, P., Forberger, S., Woods, C.B., Lakerveld, J.: The impact of mass-media campaigns on physical activity: a review of reviews through a policy lens.
17. Uti, D. E., Ibiam U. A., Omang, W. A., Udeozor, P. A., Umoru, G. U., Nwadium, S. K., Bawa, I., Alum, E. U., Mordi, J. C., Okoro, E. O., Obeten, U. N., Onwe, E. N., Zakari, S., Opotu, O. R., Aja, P. M. Buchholziacoriacea Leaves Attenuated Dyslipidemia and Oxidative Stress in Hyperlipidemic Rats and Its Potential Targets InSilico. *Pharmaceutical Fronts*. 2023; 05(03): e141-e152. DOI: 10.1055/s-0043-1772607.
18. de Barcelos, G.T., Heberle, I., Coneglian, J.C., Vieira, B.A., Delevatti, R.S., Gerage, A.M.: Effects of Aerobic Training Progression on Blood Pressure in Individuals With Hypertension: A Systematic Review With Meta-Analysis and Meta-Regression. *Front Sports Act Living*. 4, 719063 (2022). <https://doi.org/10.3389/fspor.2022.719063>

19. Hategeka, C., Adu, P., Desloge, A., Marten, R., Shao, R., Tian, M., Wei, T., Kruk, M.E.: Implementation research on noncommunicable disease prevention and control interventions in low- and middle-income countries: A systematic review. *PLoS Med.* 19, e1004055 (2022). <https://doi.org/10.1371/journal.pmed.1004055>
20. Kraef, C., Juma, P.A., Mucumbitsi, J., Ramaiya, K., Ndikumwenayo, F., Kallestrup, P., Yonga, G.: Fighting non-communicable diseases in East Africa: assessing progress and identifying the next steps. *BMJ Glob Health.* 5, e003325 (2020). <https://doi.org/10.1136/bmjgh-2020-003325>
21. Uduak E U, Netete B. V, Timbuak J. A, Ibegbu A. O, Musa S. A, Hamman W. O (2014). Dermatoglyphics and Cheiloscopy Pattern in Hypertensive Patients; A Study in Ahmadu Bello University Teaching Hospital, Zaria, Nigeria and Environs. *International Journal of Scientific and Research Publications*, 4, (5), 1-5.
22. Kassa, M.D., Grace, J.M.: Noncommunicable Diseases Prevention Policies and Their Implementation in Africa: A Systematic Review. *Public Health Rev.* 42, 1604310 (2022). <https://doi.org/10.3389/phrs.2021.1604310>
23. Frantz, J., Ngambare, R.: Physical activity and health promotion strategies among physiotherapists in Rwanda. *Afr Health Sci.* 13, 17-23 (2013). <https://doi.org/10.4314/ahs.v13i1.3>
24. Olayode, I.O., Chau, H.-W., Jamei, E.: Barriers Affecting Promotion of Active Transportation: A Study on Pedestrian and Bicycle Network Connectivity in Melbourne's West. *Land.* 14, 47 (2024). <https://doi.org/10.3390/land14010047>

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