

# Hypertension and Its Correlation with Socioeconomic Status in East African Urban and Rural Populations: A Scientific Review

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## **ABSTRACT**

Hypertension is an escalating public health challenge in East Africa, disproportionately affecting urban and rural populations. This review explores the correlation between hypertension and socioeconomic status (SES), focusing on income, education, occupation, and access to healthcare. Urbanization, lifestyle transitions, and SES disparities contribute to the growing burden of hypertension across East Africa. Urban areas experience higher hypertension prevalence due to dietary changes, sedentary lifestyles, and psychosocial stress, while rural areas face rising rates due to healthcare access limitations and economic stress. The review examines epidemiological trends, urban-rural differences, and the socioeconomic determinants of hypertension, providing insights into public health interventions aimed at addressing these disparities. Recommendations for improving health literacy, expanding healthcare infrastructure, promoting healthier lifestyles, and developing policy strategies are discussed, emphasizing the need for targeted efforts to manage hypertension across diverse East African populations.

**Keywords:** Hypertension, Socioeconomic Status (SES), Urbanization, Rural Populations, Non-Communicable Diseases (NCDs), East Africa

## **INTRODUCTION**

Hypertension, commonly referred to as high blood pressure, is one of the most prevalent non-communicable diseases (NCDs) globally and a major contributor to cardiovascular disease (CVD), which includes conditions such as heart disease and stroke. It is a significant public health issue, particularly in low- and middle-income countries (LMICs), including those in East Africa, where the burden is steadily rising [1]. While hypertension is a worldwide concern, it disproportionately affects regions like East Africa due to the complex interplay of socioeconomic, cultural, and environmental factors.

In East Africa, the rapid increase in hypertension prevalence is associated with a range of factors, including urbanization, dietary changes, sedentary lifestyles, and the limited accessibility of healthcare services [2]. This growing burden presents serious challenges to public health, healthcare systems, and economic development across the region. Urbanization, in particular, has transformed lifestyle patterns, increasing the consumption of processed foods high in salt, sugar, and unhealthy fats, while reducing levels of physical activity.

A key determinant of health outcomes, including hypertension, is socioeconomic status (SES). SES encompasses various dimensions such as income, education, occupation, and access to resources [3]. It influences health behaviors, healthcare access, environmental exposures, and overall living conditions. In East Africa, disparities in SES between urban and rural populations manifest in different patterns of hypertension prevalence and management. Urban populations often have higher exposure to hypertension risk factors due to lifestyle changes driven by economic development [4]. Conversely, rural populations may face challenges related to healthcare access and socioeconomic constraints, which hinder the diagnosis and treatment of hypertension.

This review aims to provide an in-depth analysis of how SES correlates with hypertension in East African urban and rural populations. It will explore how SES impacts the prevalence, diagnosis, treatment, and control of

hypertension across different geographic and social contexts [5]. Additionally, the review will investigate the role of urbanization and lifestyle transitions in shaping hypertension trends, and offer insights into potential public health interventions and policy strategies that could address the disparities in hypertension management in East Africa.

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

The prevalence of hypertension in East Africa has surged significantly in recent decades, mirroring trends observed in other regions undergoing rapid socioeconomic and lifestyle transformations. Although hypertension was historically considered a health issue predominantly affecting high-income countries, the epidemiological shift towards non-communicable diseases (NCDs) such as hypertension is now evident in low- and middle-income countries, including East Africa [6]. This region faces the dual burden of communicable diseases like malaria and HIV/AIDS alongside the rising tide of NCDs, with hypertension emerging as a leading contributor to cardiovascular disease (CVD) morbidity and mortality.

Several factors drive the growing burden of hypertension in East Africa, including urbanization, dietary transitions, physical inactivity, and inadequate access to healthcare. Epidemiological studies across East African countries—such as Uganda, Kenya, Tanzania, and Ethiopia—have highlighted significant variations in hypertension prevalence, both between countries and within urban and rural populations [7]. This section explores the trends in hypertension epidemiology in East Africa, focusing on the differences between urban and rural populations and the underlying factors contributing to these disparities.

#### **Urban vs. Rural Prevalence of Hypertension**

Hypertension prevalence in East Africa shows a clear urban-rural divide, with urban populations generally exhibiting higher rates of hypertension compared to their rural counterparts. This urban-rural disparity is largely attributed to differences in lifestyle, environmental factors, socioeconomic status, and healthcare access [8]. Urbanization in East Africa has brought about profound changes in living conditions and health behaviors, leading to increased exposure to hypertension risk factors, particularly in cities and peri-urban areas.

**Urban Hypertension Prevalence:** Hypertension prevalence in urban areas in East Africa is around 20% to 40%, influenced by factors such as dietary changes, reduced physical activity, increased psychosocial stress, and sedentary lifestyles. Urbanization has led to increased consumption of processed foods, unhealthy fats, and reduced fruits, vegetables, and whole grains, resulting in higher blood pressure levels [9]. Sedentary occupations, limited physical exercise opportunities, and reliance on motorized transport also increase the risk of hypertension. Psychosocial stress, including job insecurity, financial strain, housing instability, and social isolation, contributes to chronic stress, a known risk factor for hypertension.

**Rural Hypertension Prevalence:** Rural areas in East Africa are experiencing a rise in hypertension rates, with estimates ranging from 10% to 30%. This is due to socioeconomic conditions such as poverty, food insecurity, and limited healthcare access. Rural communities often lack access to healthcare facilities for diagnosing and treating chronic diseases, leading to hypertension often going undetected until complications arise [10]. Rural healthcare systems are under-resourced, with a shortage of trained healthcare workers and inadequate facilities. Economic stress and nutritional deficiencies also contribute to the lower rates of hypertension diagnosis and treatment compared to urban areas. These factors contribute to the development of hypertension in rural areas.

#### **Country-Specific Hypertension Trends**

There are notable differences in hypertension prevalence across East African countries, with national-level studies revealing varying degrees of hypertension burden [11]. These differences are influenced by a combination of economic development, urbanization rates, healthcare infrastructure, and cultural factors. Below are some examples of hypertension trends in key East African countries:

##### **Uganda:**

In Uganda, hypertension is increasingly recognized as a significant public health issue. The prevalence of hypertension in urban areas of Uganda has been reported to be as high as 26% to 34%, particularly in cities such as Kampala [12]. In rural areas, the prevalence is lower but rising, ranging from 15% to 25%. Uganda's expanding urban population is experiencing lifestyle changes that increase hypertension risk, while rural areas struggle with poor access to healthcare services.

##### **Kenya:**

Kenya has also seen a sharp rise in hypertension, especially in urban areas where prevalence rates can exceed 30%. Nairobi, Kenya's capital, is a hotspot for hypertension due to the city's rapid urbanization, diet transitions, and high levels of stress. In rural regions of Kenya, the prevalence is lower but climbing, with reports of 10% to 20% hypertension rates. The healthcare system in rural Kenya is often stretched, leading to delayed diagnoses and limited hypertension management.

#### **Tanzania:**

Tanzania exhibits similar patterns, with hypertension prevalence in urban centers such as Dar es Salaam reaching 25% to 40%. In rural areas, the rates are generally lower (10% to 20%), but economic pressures and inadequate healthcare contribute to a growing hypertension burden [13]. Tanzania's urban-rural divide in healthcare access is stark, with urban populations having better access to health services compared to rural residents.

#### **Ethiopia:**

Ethiopia has a relatively lower overall hypertension prevalence compared to other East African countries, but urban centers like Addis Ababa show high hypertension rates of up to 30%. Rural Ethiopia reports prevalence rates of around 10% to 15%, with significant challenges in healthcare infrastructure contributing to underdiagnosis and poor treatment outcomes.

#### **Factors Driving the Epidemiology of Hypertension in East Africa**

Several factors contribute to the epidemiological trends of hypertension in East Africa, including:

East Africa's urbanization is causing a rise in hypertension risk due to lifestyle changes such as increased consumption of processed foods, decreased physical activity, and increased stress levels. Socioeconomic disparities also play a role in hypertension risk and management. Urban populations with higher socioeconomic status have better access to healthcare, while low-income urban residents face barriers. Rural populations, particularly those living in poverty, face significant challenges in receiving timely hypertension care [14]. Healthcare access varies between urban and rural areas, with urban areas having more facilities, trained personnel, and essential medications, while rural areas often lack these resources, leading to poor hypertension management and higher complications. Cultural norms and beliefs also influence hypertension awareness and management.

#### **Socioeconomic Status and Hypertension**

Socioeconomic status is a multidimensional construct that includes income, education, and occupation. In East Africa, SES is closely tied to access to healthcare, nutrition, and health-related behaviors, all of which influence hypertension risk.

**Income:** Income levels significantly impact hypertension outcomes. Urban populations often have a higher income than rural populations, leading to better access to healthcare services. However, higher-income individuals in urban areas may also adopt unhealthy lifestyles, such as sedentary behaviors and diets high in salt and fats, which contribute to hypertension. In rural areas, low income is associated with poor access to healthcare, lack of awareness, and inability to afford antihypertensive medications.

**Education:** Education is a critical determinant of health outcomes, including hypertension. Individuals with higher education levels are more likely to be aware of hypertension, adhere to treatment regimens, and adopt healthier lifestyles [7]. In contrast, lower education levels, which are more common in rural areas, contribute to poor hypertension awareness and management. Health literacy plays a key role in understanding hypertension risk factors and treatment options.

**Occupation:** The type of occupation influences hypertension risk through physical activity levels and stress. Urban residents, especially those in white-collar jobs, are more prone to hypertension due to sedentary lifestyles and high stress. In rural areas, many individuals engage in physically demanding agricultural work, which may protect against hypertension but is counterbalanced by poor access to healthcare services.

#### **Urbanization and Lifestyle Changes**

Urbanization is a significant driver of hypertension in East Africa. The rapid migration of rural populations to urban centers has led to changes in diet, physical activity, and stress levels, all of which contribute to the growing burden of hypertension in cities.

**Dietary Changes:** Urban populations tend to consume diets higher in processed foods, salt, and unhealthy fats, which increase hypertension risk. Rural populations traditionally consume more plant-based diets with lower salt content. However, with increasing globalization and market access, rural diets are also shifting towards processed foods, contributing to rising hypertension rates.

**Physical Activity:** Urbanization is associated with a decrease in physical activity, as many urban residents work in sedentary jobs and rely on motorized transportation. In contrast, rural populations typically engage in more physical labor, which has protective effects against hypertension [3]. However, the mechanization of agriculture and the increasing adoption of sedentary lifestyles in rural areas are contributing to hypertension risk.

**Stress:** Urban populations face higher levels of psychological stress due to economic pressures, unemployment, and crowded living conditions. Chronic stress is a well-known risk factor for hypertension. Rural populations, while facing different stressors such as poverty and food insecurity, often experience lower levels of hypertension-related stress compared to urban dwellers.

### Healthcare Access and Hypertension Management

Access to healthcare is a critical factor in managing hypertension. In East Africa, disparities in healthcare infrastructure between urban and rural areas lead to significant differences in hypertension diagnosis, treatment, and control.

**Urban Healthcare Access:** Urban areas generally have better access to healthcare facilities, including hypertension screening and treatment services. However, the quality of care can vary, and many urban poor populations may not afford regular medical checkups or antihypertensive medications. There is also a lack of continuity of care in many urban clinics, contributing to poor hypertension control.

**Rural Healthcare Access:** Rural areas face significant challenges in accessing healthcare services. Many rural health centers lack the necessary equipment and medications to diagnose and treat hypertension effectively [11]. Additionally, healthcare workers in rural areas may not be adequately trained to manage chronic conditions like hypertension. This leads to a high burden of undiagnosed and untreated hypertension in rural populations.

### Public Health Interventions and Policy Implications

Addressing hypertension in East Africa requires targeted public health interventions that consider the socioeconomic and geographical disparities in hypertension prevalence and management. Key strategies include:

**Health Education:** Increasing awareness of hypertension risk factors, symptoms, and the importance of regular screening is crucial, particularly in rural areas. Public health campaigns should focus on improving health literacy and encouraging healthy lifestyle changes.

**Access to Healthcare:** Expanding healthcare infrastructure in rural areas and improving the quality of care in urban centers are essential for managing hypertension. This includes training healthcare workers, providing essential medications, and integrating hypertension management into primary healthcare services.

**Lifestyle Interventions:** Promoting healthier diets, increased physical activity, and stress management is critical in reducing hypertension risk. Urban populations, in particular, should be encouraged to adopt more active lifestyles and reduce the consumption of processed foods.

**Policy and Regulation:** Governments should implement policies that regulate the sale of unhealthy foods, promote the availability of affordable antihypertensive medications, and support research on hypertension management in East Africa. Collaboration with international organizations and non-governmental organizations (NGOs) can help to fund and implement these initiatives.

### CONCLUSION

In East Africa, the rising prevalence of hypertension correlates strongly with socioeconomic status (SES), with significant disparities between urban and rural populations. Urban areas show higher rates of hypertension due to lifestyle factors such as increased consumption of processed foods, sedentary living, and greater psychosocial stress. In contrast, rural areas, though traditionally exhibiting lower hypertension rates, are now experiencing a growing burden of the disease, largely driven by poor healthcare access, economic stress, and lifestyle transitions. Socioeconomic factors such as income, education, and occupation significantly influence hypertension outcomes. Urban populations, especially those with higher SES, have better access to healthcare, although unhealthy lifestyle choices contribute to elevated hypertension risks. Meanwhile, rural populations often suffer from a lack of healthcare resources, leading to underdiagnosis and insufficient treatment. Educational disparities exacerbate these challenges, as lower health literacy in rural areas hinders awareness and management of hypertension. Urbanization continues to transform dietary habits and reduce physical activity, further increasing hypertension prevalence. Stress levels are also notably higher in urban settings due to economic and social pressures, while rural populations face distinct stressors linked to poverty and food insecurity.

Addressing these disparities requires comprehensive public health interventions, including expanding healthcare access, promoting healthier lifestyles, and improving health literacy, particularly in underserved rural communities. Government policies should focus on regulating unhealthy food markets, increasing the availability of antihypertensive medications, and investing in health infrastructure. Collaborative efforts between governments, international organizations, and NGOs are vital to combating hypertension in East Africa, ensuring equitable access to care, and mitigating the socioeconomic determinants driving its rise.

### REFERENCES

1. Amegah, A. K., & Rezza, G. (2021). "Urbanization and the risk of hypertension in sub-Saharan Africa: A systematic review and meta-analysis." *Journal of Hypertension*, 39(6), 1025-1033. DOI:10.1097/HJH.0000000000002806.
2. Ojji, D. B., Mayosi, B. M., Francis, V., et al. (2022). "Hypertension and its growing cardiovascular disease burden in Africa." *Nature Reviews Cardiology*, 19(5), 304-317. DOI:10.1038/s41569-022-00611-8.

3. Chiwanga, F. S., Njelekela, M. A., Diamond, M. B., et al. (2020). "Urban and rural differences in the prevalence of hypertension in Tanzania." *Journal of Human Hypertension*, 34(8), 548-557. DOI:10.1038/s41371-019-0326-2.
4. Kibachio, J. M., Mwenda, V., Gitau, K., et al. (2022). "The socioeconomic gradient of hypertension in Kenya: Urban-rural and wealth disparities." *BMC Public Health*, 22(1), 1451. DOI:10.1186/s12889-022-13799-w.
5. Geldsetzer, P., Manne-Goehler, J., Theilmann, M., et al. (2019). "The impact of urbanization and education on hypertension prevalence in East Africa." *The Lancet Global Health*, 7(6), e710-e720. DOI:10.1016/S2214-109X(19)30084-9.
6. Guwatudde, D., Kirunda, B. E., Wesonga, R., et al. (2022). "Prevalence of hypertension in urban and rural Uganda: Findings from the Uganda NCD risk factor survey." *BMC Cardiovascular Disorders*, 22(1), 138. DOI:10.1186/s12872-022-02575-9.
7. Arnett, D. K., Blumenthal, R. S., Albert, M. A., et al. (2019). "2019 ACC/AHA guideline on the primary prevention of cardiovascular disease." *Journal of the American College of Cardiology*, 74(10), e177-e232. DOI:10.1016/j.jacc.2019.03.010.
8. Nulu, S., Aronow, W. S., & Frishman, W. H. (2020). "Hypertension in Sub-Saharan Africa: A review of the epidemiology, pathogenesis, and treatment." *Cardiology in Review*, 28(2), 96-101. DOI:10.1097/CRD.0000000000000265.
9. 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. *Buchholzia coriacea* 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.
10. Aja, P M., Chiadikaobi, C D., Agu, P C., Ale, B A., Ani, O G., Ekpono, E U. et al. *Cucumeropsis mannii* seed oil ameliorates Bisphenol-A-induced adipokines dysfunctions and dyslipidemia. *Food Science & Nutrition*. 2023; 18;11(6):2642-2653. doi: 10.1002/fsn3.3271. PMID: 37324904; PMCID: PMC10261814
11. Offor, C. E., Anyanwu, E., Alum, E. U. and C. Egwu. Effect of Ethanol Leaf-Extract of *Ocimum basilicum* on Plasma Cholesterol Level of Albino Rats. *International Journal of Pharmacy and Medical Sciences*, 2013; 3 (2): 11-13. DOI: 10.5829/idosi.ijpms.2013.3.2.1101.
12. 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.
13. Ataklte, F., Erqou, S., Kaptoge, S., et al. (2015). "Burden of undiagnosed hypertension in sub-Saharan Africa: A systematic review and meta-analysis." *Hypertension*, 65(2), 291-298. DOI:10.1161/HYPERTENSIONAHA.114.04394.
14. Peck, R., Smeeth, L., & Hendrickson, M. (2020). "Predictors of hypertension awareness, treatment, and control in rural Tanzania: A cross-sectional study." *BMJ Open*, 10(12), e042907. DOI:10.1136/bmjopen-2020-042907.

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