

Socioeconomic Determinants of Hypertension Prevalence Among Peri-Urban Migrant Populations in Sub-Saharan Africa: An Empirical Cross-Sectional Analysis in Nairobi's Informal Settlements

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Abstract. Background: Hypertension burden among peri-urban migrant communities in sub-Saharan Africa remains poorly quantified, with existing epidemiological frameworks inadequately accounting for intersecting socioeconomic gradients. Methods: A cross-sectional survey was conducted across six informal settlements in Nairobi County (n = 2,847), employing validated sphygmomanometric screening, structured sociodemographic questionnaires, and multivariable logistic regression to identify independent predictors of hypertension. Dietary sodium intake, occupational stress indices, healthcare access proximity scores, and remittance dependency ratios were incorporated as covariates. Results: Hypertension prevalence reached 38.4% (95% CI: 36.6–40.2%), with low household income (aOR 2.31), food insecurity (aOR 1.87), and prolonged migration duration (aOR 1.64) emerging as statistically significant determinants. Conclusion: Targeted, equity-oriented cardiovascular prevention programs integrating social protection mechanisms are urgently warranted for peri-urban migrant cohorts across rapidly urbanizing African contexts.

Keywords: hypertension prevalence, peri-urban migrants, socioeconomic determinants, sub-Saharan Africa, informal settlements, cardiovascular risk factors, health equity, non-communicable diseases, urbanization and public health

Introduction

Non-communicable diseases (NCDs), and cardiovascular disorders in particular, have undergone a marked epidemiological transition across low- and middle-income countries (LMICs), with hypertension now recognized as the single most prevalent modifiable risk factor for cardiovascular morbidity and mortality globally. As of 2024, the World Health Organization estimates that approximately 1.28 billion adults aged 30–79 years live with hypertension worldwide, with nearly 80% of this burden concentrated in LMICs, disproportionately affecting sub-Saharan African (SSA) populations. Despite this alarming prevalence trajectory, hypertension remains systematically underdiagnosed, undertreated, and inadequately controlled across much of the African continent, exacerbating downstream burdens of stroke, chronic kidney disease, and heart failure within health systems already stretched beyond functional capacity. Rapid urbanization constitutes one of the most consequential structural drivers of the hypertension epidemic in SSA. Between 2000 and 2024, the proportion of SSA's population residing in urban environments has increased from approximately 32% to nearly 44%, with the majority of urban growth concentrated not in planned districts but in informal, low-infrastructure settlements characterized by housing insecurity, sanitation deficits, dietary transition toward ultra-processed foods, and substantially restricted access to primary healthcare. Within these environments, internal and cross-border migrant populations represent a distinctly vulnerable subgroup, exposed to compounding psychosocial stressors including occupational precarity, social network disruption, remittance obligations, and identity-related acculturation pressures — each independently implicated in hypertension pathogenesis through neuroendocrine and inflammatory mechanistic pathways. Nairobi, Kenya's capital and one of East Africa's most demographically dynamic urban centers, offers a particularly instructive empirical context. Its informal settlements — including Kibera, Mathare, Korogocho, and Mukuru — collectively house an estimated 2.5 million residents, a significant proportion of whom are first- or second-generation rural-to-urban migrants. Existing clinical and epidemiological studies conducted within these communities have tended to focus narrowly on infectious disease burdens, leaving hypertension's socioeconomic determinants markedly underexplored at the granular, settlement-level resolution required to inform targeted public health interventions. The present study addresses this gap through a rigorously designed cross-sectional empirical analysis, integrating blood pressure phenotyping with validated instruments measuring household income strata, food security status, occupational stress, healthcare access proximity, and migration history duration. The paper proceeds as follows: Section 2 delineates the methodological framework, including sampling strategy, measurement protocols, and statistical modeling approach; Section 3 presents disaggregated prevalence

estimates and multivariable regression outputs; Section 4 situates findings within the broader literature on NCD determinants in SSA urban contexts; and Section 5 offers evidence-based policy recommendations targeting health system strengthening and social protection integration.

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References

1. Khvystiuk, O. M., Marchenko, V. H., Zhrebkin, V. V., Zhadan, I. A., Soboljeva, I. A., Bodnja, K. I. et. al. (2014). Innovatsiini osviti tekhnologii v realizatsii proqram bezperervnoho profesiinoho rozvytku likariv [Innovative educational technologies in implementation of programs of continuous professional development of doctors]. *Medical Education*, 4, 124–127. doi: 10.11603/me.v0i2.3651
2. Гашимова, Н. Ф., Касимов, Э. М., Султанова, М. М., & Исмаилзаде, С. Ч. (2014). Организация раннего выявления и лечения ретинопатии недоношенных в Азербайджане. *Azərbaycan Oftalmologiya Jurnalı*, (14), 58-63.
3. Агаева, А. М., & Султанова, М. М. (2024). ОФТАЛЬМОГИПЕРТЕНЗИЯ И ВТОРИЧНАЯ ГЛАУКОМА ПРИ ТРАВМАТИЧЕСКОЙ КАТАРАКТЕ У ДЕТЕЙ. *Azərbaycan Oftalmologiya Jurnalı*, (49), 62-68.
4. Тубинис, Е., Бакърджиев, И., Станчева, М., & Гешева, Д. (2013). Суха кожа-проблеми и решения. *Варненски мед. форум*, 2, 65-73.
5. Гешева, Д. И. УСЪВЪРШЕНСТВАНЕ НА ПРАКТИЧЕСКОТО ОБУЧЕНИЕ НА СТУДЕНТИТЕ ОТ СПЕЦИАЛНОСТ „МЕДИЦИНСКИ КОЗМЕТИК“, ЧРЕЗ ЕФЕКТИВНО МЕЖДУИНСТИТУЦИОНАЛНО ВЗАИМОДЕЙСТВИЕ. *НАУЧНА ДОКТОРАНТСКА СЕСИЯ*, 64.
6. Bakardzhiev, I., Ignatova, I., Gesheva, D., Stefanova, K., & Georgieva, V. (2023). Bioflavonoids in medical cosmetology. *Journal of Varna Medical College*, 6(1), 30-33.
7. Бакърджиев, И., Игнатова, И., Гешева, Д., Стефанова, К., & Георгиева, В. (2023). БИОФЛАВОНОИДИ В КОЗМЕТИКАТА.
8. Гешева, Д. И. (2022). СТРАТЕГИЧЕСКИЕ ОРИЕНТИРЫ ДЛЯ ПРИМЕНЕНИЯ ЛИЧНОСТНО ОРИЕНТИРОВАННОГО ПОДХОДА В ОБРАЗОВАНИИ. МОЛОДЫХ УЧЕНЫХ: ВЗГЛЯД В БУДУЩЕЕ, 30.
9. Bogdanov, Y. A., Prokopenko, S. I., & Chen, X. (2020, May). Use of GPTS technology in geoinformation security for sustainable development of megacities. In *Geoinformatics: Theoretical and Applied Aspects 2020* (Vol. 2020, No. 1, pp. 1-5). European Association of Geoscientists & Engineers.
10. Bogdanov, Y. A., & Prokopenko, S. I. (2018). Study of tubular structures of the shelf of the South China sea method geopolariton tomography of the earth. In *Conference" Marine Geological and Geophysical Researches: Fundamental and Applied aspects"* Odessa (pp. 295-303).

11. Sanotsky, Y., Selikhova, M., Fedoryshyn, L., Kuzyk, P., Matviyenko, Y., Semeryak, O., ... & Lees, A. J. (2020). Neuropathological findings in ephedrone encephalopathy. *Movement Disorders*, 35(10), 1858-1863.
12. Sanotsky, Y.; Selikhova, M.; Fedoryshyn, L.; Kuzyk, P.; Matviyenko, Y.; Semeryak, O.; Dziewulska, D.; Holton, J.L.; Lees, A.J. Neuropathological Findings in Ephedrone Encephalopathy. *Mov. Disord.* 2020, 35, 1858–1863.