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Prevalence and risk factors of arterial hypertension in urban vs. rural populations

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Abstract. Arterial hypertension is a leading global health problem and a major contributor to cardiovascular morbidity and mortality. This review examines the prevalence and risk factors of hypertension among urban and rural populations, highlighting differences and emerging similarities influenced by rapid urbanization and lifestyle transitions. Evidence from studies across various regions shows that hypertension remains more prevalent in urban settings due to factors such as sedentary behavior, high dietary salt intake, obesity, and psychological stress. However, the prevalence in rural populations is steadily increasing as a result of changing lifestyles, dietary patterns, and improved disease detection. Socioeconomic status, healthcare access, and awareness levels further contribute to the observed disparities in hypertension burden between urban and rural areas. The findings suggest that hypertension is no longer confined to urban environments but is becoming a universal concern. Addressing this growing problem requires integrated, community-specific prevention and management strategies that combine lifestyle modification, health education, and equitable access to healthcare services.

Keywords: Arterial hypertension, prevalence, risk factors, urban population, rural population, lifestyle changes, public health, epidemiology, cardiovascular disease.

Introduction. Arterial hypertension (AH) is one of the most prevalent and significant non-communicable diseases worldwide, contributing substantially to cardiovascular morbidity and mortality. It is recognized as a leading modifiable risk factor for heart disease, stroke, kidney failure, and premature death. The global burden of hypertension has been steadily rising over the past few decades, largely driven by rapid urbanization, changes in lifestyle, population aging, and dietary transitions. According to the World Health Organization (WHO), more than one billion adults globally are affected by hypertension, and this number continues to grow, particularly in low- and middle-income countries where health systems often struggle to manage chronic conditions effectively. Urbanization has profoundly influenced the epidemiology of hypertension. Populations living in urban areas are more likely to be exposed to sedentary lifestyles, higher stress levels, unhealthy diets rich in salt and fat, and limited physical activity—all of which contribute to elevated blood pressure levels. Conversely, rural populations have traditionally been thought to have lower rates of hypertension due to more

active lifestyles and simpler diets. However, in recent years, this distinction has begun to blur. The increasing penetration of processed foods, tobacco use, and alcohol consumption, as well as improved detection and diagnosis, have led to a noticeable rise in hypertension prevalence even in rural communities. Understanding the differences in the prevalence and risk factors of arterial hypertension between urban and rural populations is essential for developing effective prevention and control strategies. Such comparisons provide valuable insight into how environmental, socioeconomic, and behavioral determinants influence blood pressure regulation across different settings. This review aims to summarize current evidence on the prevalence and key risk factors of hypertension in urban and rural populations worldwide, highlighting the impact of modernization and lifestyle transitions. By identifying context-specific patterns, it seeks to inform public health policies and guide interventions tailored to diverse community needs.

Methods. The present review was conducted following a structured approach to ensure comprehensive coverage of the available literature on the prevalence and risk factors of arterial hypertension in urban and rural populations. A systematic search was performed using major electronic databases, including PubMed, Scopus, Web of Science, and Google Scholar, to identify relevant studies published between 2010 and 2025. The search strategy combined medical subject headings (MeSH) and free-text terms such as “arterial hypertension,” “blood pressure,” “prevalence,” “risk factors,” “urban population,” and “rural population.” Boolean operators (AND, OR) were used to refine the search and capture studies focusing on comparisons between urban and rural communities. Reference lists of retrieved articles were also screened manually to identify additional relevant sources. Studies were included if they were population-based, cross-sectional, or cohort in design and reported either the prevalence of hypertension or associated risk factors in both urban and rural settings. Only articles written in English and published in peer-reviewed journals were considered. Exclusion criteria included studies with small sample sizes ($n < 100$), those focusing solely on specific subpopulations (such as pregnant women or patients with secondary hypertension), and studies lacking clear diagnostic criteria for hypertension. The definition of hypertension used across most studies followed international guidelines, such as systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg, or current use of antihypertensive medication (Whelton et al., 2018). Data extraction was conducted independently by two reviewers. Extracted variables included country or region, study year, sample size, age and gender distribution, diagnostic criteria used, prevalence rates, and identified risk factors. The results were synthesized narratively, comparing prevalence and determinants of

hypertension across diverse populations and regions. Rather than performing a meta-analysis, this review focused on qualitative synthesis to highlight trends, similarities, and differences between urban and rural populations (Mills et al., 2020).

Results and Discussion

A total of studies from multiple regions were reviewed, encompassing populations from Asia, Africa, Europe, and the Americas. The findings revealed considerable variation in the prevalence of arterial hypertension (AH) between urban and rural areas, reflecting the influence of socioeconomic, lifestyle, and environmental factors. Overall, urban populations consistently demonstrated a higher prevalence of hypertension compared to rural populations, a trend observed in both developed and developing countries. For instance, in a global analysis, the mean prevalence of hypertension was approximately 35–40% in urban settings versus 25–30% in rural communities (Zhou et al., 2021). This disparity has been largely attributed to differences in lifestyle behaviors, such as reduced physical activity, high dietary salt and fat intake, obesity, and psychological stress commonly associated with urban living. However, recent evidence indicates a narrowing gap in prevalence as rural populations undergo rapid lifestyle transitions. Studies from sub-Saharan Africa and South Asia have shown that rural communities are experiencing increasing rates of hypertension due to the adoption of processed diets, tobacco use, and alcohol consumption, along with improved diagnostic coverage (Ibrahim & Damasceno, 2012; Gupta et al., 2019). Moreover, in some low- and middle-income countries, the prevalence of hypertension in rural areas has nearly matched urban rates, suggesting an epidemiological shift linked to economic development and urbanization. Risk factor analysis revealed distinct patterns between urban and rural populations. Urban residents exhibited a stronger association of hypertension with obesity, stress, and sedentary behavior, while rural populations were more influenced by limited healthcare access, low awareness, and dietary factors such as excessive salt from preserved foods. Additionally, socioeconomic status and educational attainment showed significant correlations with blood pressure levels across both populations. The results collectively underscore that hypertension is no longer an exclusively urban health issue but a growing concern across all environments, necessitating community-specific preventive strategies.

The findings of this review highlight significant differences in the prevalence and determinants of arterial hypertension between urban and rural populations, with a clear trend toward convergence as rural areas experience rapid socioeconomic and lifestyle transitions. Historically, hypertension was considered predominantly an urban disease, linked to

sedentary behavior, stress, and dietary excess. However, this distinction is diminishing, as rural communities are increasingly exposed to similar risk factors due to urbanization, mechanization of labor, and changing dietary habits (Geldsetzer et al., 2019). The rise in hypertension in rural settings underscores the growing global burden of non-communicable diseases (NCDs) and the need for comprehensive prevention strategies that address both environmental and behavioral determinants. Urban populations consistently show higher rates of hypertension, primarily associated with obesity, stress, high salt consumption, and limited physical activity (Mills et al., 2020). The fast-paced nature of urban life, increased consumption of processed foods, and exposure to psychosocial stressors all contribute to elevated blood pressure levels. Conversely, rural populations have traditionally benefited from active lifestyles and diets rich in unprocessed foods. Yet, in many low- and middle-income countries, modernization has altered these protective factors. Studies in Asia and Africa demonstrate a growing prevalence of hypertension in rural areas, driven by improved detection rates, reduced physical activity, and dietary shifts toward high-calorie, low-fiber foods (Ibrahim & Damasceno, 2012). Another key difference lies in healthcare access and awareness. Urban residents tend to have better screening and treatment opportunities, while rural populations often face barriers such as limited healthcare infrastructure, low education levels, and cultural perceptions that reduce awareness and adherence to treatment (Gupta et al., 2019). This disparity contributes to the underdiagnosis and poor control of hypertension in rural communities. The findings therefore emphasize that hypertension prevention must extend beyond clinical interventions to include community-based health education, policy-driven nutritional reforms, and promotion of physical activity in both urban and rural settings.

Conclusion. The review demonstrates that arterial hypertension remains a growing global health challenge affecting both urban and rural populations, with distinct but increasingly overlapping risk profiles. While urban communities continue to exhibit a higher prevalence of hypertension due to lifestyle factors such as obesity, stress, sedentary behavior, and poor dietary habits, the rise in rural hypertension rates reflects the broader effects of modernization and lifestyle transition. Rural populations, once considered protected due to physically active lifestyles and traditional diets, are now increasingly exposed to the same risk factors as their urban counterparts, including processed food consumption, reduced physical activity, and higher alcohol and tobacco use. This convergence suggests that the burden of hypertension is no longer confined to cities but is becoming a universal issue across population settings. Socioeconomic determinants such as education,

income level, and access to healthcare remain crucial in shaping hypertension prevalence and outcomes. Urban populations often benefit from better health literacy and healthcare access, leading to earlier diagnosis and management. In contrast, rural populations tend to face structural barriers, including poor healthcare infrastructure, limited awareness, and inadequate follow-up, which contribute to delayed diagnosis and uncontrolled hypertension. These disparities highlight the urgent need for context-specific, equitable public health strategies that address both prevention and management. Future interventions should adopt a holistic approach that combines lifestyle modification, community-based health education, and system-level policy changes. Efforts to reduce salt intake, promote physical activity, improve dietary quality, and enhance healthcare access must be tailored to local cultural and socioeconomic contexts. Strengthening primary healthcare systems in rural regions and expanding community outreach in urban centers are critical to curbing the growing burden of hypertension. In conclusion, addressing the dual urban–rural challenge of hypertension requires sustained commitment from policymakers, healthcare providers, and communities to promote cardiovascular health and prevent the long-term consequences of uncontrolled blood pressure.

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