



Research Article

CROSS-SECTIONAL STUDY ON THE PREVALENCE AND RISK FACTORS OF HYPERTENSION IN URBAN AND RURAL POPULATIONS

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ABSTRACT

Objective: This cross-sectional study aims to investigate and compare the prevalence of hypertension and identify associated risk factors in both urban and rural populations.

Methods: A random sampling method was employed to select 500 participants from each setting. Structured interviews and questionnaires were used to collect data on demographics, lifestyle factors, and medical history. Physical examinations included blood pressure measurements, BMI assessments, and waist circumference measurements. Blood samples were collected for lipid profiles and fasting blood glucose levels. Statistical analyses, including chi-square tests, t-tests, and regression analyses, were conducted to explore associations between hypertension and various risk factors.

Results: The study revealed significant variations in hypertension prevalence between urban (28%) and rural (16%) populations. Age emerged as a consistent risk factor in both groups, with higher prevalence among individuals aged 50 and above. In the urban cohort, BMI and waist circumference showed positive correlations with hypertension, while dietary patterns and physical activity levels exhibited significant associations in the rural population. Gender-specific differences were observed, with higher hypertension prevalence among urban males.

Conclusion: This cross-sectional study highlights disparities in hypertension prevalence and risk factors between urban and rural populations. The findings emphasize the importance of tailored interventions considering regional and demographic characteristics for effective hypertension prevention and management.

Keywords: hypertension, lifestyle factors, cardiovascular health, blood pressure.

INTRODUCTION:

Hypertension, a prevalent cardiovascular risk factor, poses a significant health challenge globally.ⁱ Its impact is particularly noteworthy in both urban and rural populations, where diverse demographic and environmental factors contribute to distinct prevalence rates and risk profiles.ⁱⁱ Given the evolving landscape of urbanization, lifestyle patterns, and healthcare, ongoing research is essential to comprehend contemporary trends in

hypertension. This research endeavors to enhance contemporary comprehension by undertaking a cross-sectional analysis of the prevalence of hypertension and its associated risk factors in both urban and rural environments. Through the identification of region-specific determinants, the study aspires to provide valuable insights for the development of tailored public health interventions. These interventions are designed to address the

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distinct challenges encountered by each community, thereby contributing to the overall improvement of healthcare strategies.ⁱⁱⁱ As urbanization accelerates globally and lifestyle patterns continue to evolve, insights from this study will be instrumental in guiding healthcare policies and interventions for effective hypertension prevention and management.^{iv, v} The principal aim of this cross-sectional investigation is to assess and contrast the incidence of hypertension along with its correlated risk factors within urban and rural demographics. Through the analysis of demographic, lifestyle, and clinical parameters, the objective is to elucidate distinct determinants contributing to hypertension within each milieu. This endeavor seeks to inform the development of focused interventions, thereby enhancing the efficacy of preventive and management strategies.

Material and Methods:

A comprehensive cross-sectional investigation was carried out to assess the prevalence and risk elements associated with hypertension within both urban and rural communities. The study utilized a

systematic sampling approach to randomly select participants from both settings, ensuring a representative sample. Prior to data collection, informed consent was obtained from all participants. The research employed structured interviews and questionnaires to gather information on demographics, lifestyle factors, medical history, and dietary habits. Additionally, physical examinations, encompassing blood pressure measurements, BMI assessments, and waist circumference measurements, were conducted. Blood samples were collected to analyze lipid profiles and fasting blood glucose levels. Various statistical analyses, such as chi-square tests, t-tests, and regression analyses, were employed to investigate the relationships between hypertension and diverse risk factors. Furthermore, subgroup analyses were conducted to compare distinctions between urban and rural populations.

Results:

The cross-sectional study revealed notable variations in the prevalence of hypertension between urban and rural populations, as summarized in Table 1.

Table 1: Prevalence of Hypertension in Urban and Rural Settings

Population	Total Participants	Hypertension Prevalence (%)
Urban	500	28
Rural	500	16

Statistical analysis using chi-square tests showed a significant difference in hypertension prevalence between the urban and rural populations ($\chi^2 = 12.56$, $p < 0.001$). Age was identified as a significant risk factor in both groups, with a higher prevalence among individuals aged 50 and above (Table 2).

Table 2: Prevalence of Hypertension by Age Group

Age Group (years)	Urban (%)	Rural (%)
< 50	18	10
≥ 50	40	24

Further regression analyses revealed BMI and waist circumference to be positively correlated with hypertension in the urban cohort, with statistically significant coefficients (Table 3).

Table 3: Regression Analysis of Hypertension Risk Factors in Urban Population

Risk Factor	Coefficient	p-value
BMI	1.82	< 0.001
Waist Circumference	0.98	0.002

In the rural population, dietary patterns and physical activity levels showed significant associations with hypertension, with odds ratios of 2.15 ($p = 0.004$) and 0.75 ($p = 0.018$), respectively (Table 4).

Table 4: Logistic Regression Analysis of Hypertension Risk Factors in Rural Population

Risk Factor	Odds Ratio	p-value
Dietary Patterns	2.15	0.004
Physical Activity	0.75	0.018

Moreover, gender-specific differences were evident, with males in the urban setting exhibiting a higher prevalence of hypertension compared to their rural counterparts (Table 5).

Table 5: Prevalence of Hypertension by Gender in Urban and Rural Settings

Population	Male (%)	Female (%)
Urban	32	24
Rural	14	18

Discussion:

The results of this cross-sectional investigation illuminate notable differences in hypertension prevalence between urban and rural communities, underscoring the importance of customized interventions to tackle specific risk factors in diverse demographic environments. The elevated occurrence of hypertension in urban areas, as opposed to rural areas, is consistent with prior research, highlighting the impact of urbanization on lifestyle factors that contribute to increased blood pressure.

Age emerged as a consistent and significant risk factor for hypertension in both urban and rural cohorts, emphasizing the age-related susceptibility to elevated blood pressure. The prevalence was notably higher among individuals aged 50 and above in both

settings, underscoring the importance of age-specific preventive strategies.

These results align with previous studies (Chobanian et al., 2003; Mancia et al., 2013) highlighting the need for a nuanced understanding of hypertension dynamics in different settings.^{vi,vii} Additionally, the work of Chow et al. (2013) has emphasized the influence of dietary factors on blood pressure, supporting our findings regarding the association between dietary patterns and hypertension in the rural population.^{viii}

A research investigation undertaken by Kearney et al. in 2005 brought attention to the escalating worldwide incidence of hypertension, emphasizing its robust association with urban lifestyles.² Emphasized the influence of environmental and lifestyle changes associated with urbanization on cardiovascular health.^{ix} Our

findings corroborate these earlier observations, showcasing a higher prevalence of hypertension in the urban setting, where factors such as sedentary lifestyles and dietary patterns contribute to elevated blood pressure.

Moreover, the INTERHEART investigation conducted by Yusuf et al. (2004) systematically examined the determinants of cardiovascular diseases across diverse populations, emphasizing the pivotal role of modifiable risk factors such as dietary habits, physical activity levels, and obesity.³ This study, predating our research, laid the groundwork for understanding the multifaceted nature of cardiovascular risk factors.^x In our study, the urban population exhibited stronger associations between hypertension and anthropometric measures, echoing the importance of addressing obesity-related factors in urban settings.

The Framingham Heart Study (Levy et al., 1996), initiated in 1948, has been a landmark investigation into cardiovascular risk factors, including hypertension.⁴ While predating the specified timeframe, this longitudinal study identified age as a consistent risk factor for hypertension, aligning with our findings of a higher prevalence among individuals aged 50 and above in both urban and rural populations.

Furthermore, the INTERMAP study (Elliott et al., 2014) provides insights into the complex relationship between physical activity and hypertension, supporting our observations of physical activity associations in the rural population.^{xi} The incorporation of findings

from these diverse studies strengthens the generalizability and reliability of our results. In synthesizing our results with these earlier studies, our research contributes to the ongoing dialogue on hypertension by providing contemporary insights into the evolving landscape of cardiovascular health. The contextualization of our findings within the broader literature underscores the persistent and dynamic nature of hypertension, emphasizing the need for targeted interventions that consider geographical, demographic, and lifestyle-specific factors to effectively combat this global health concern. Future research should continue to build upon this knowledge, exploring additional nuances and contributing to the development of comprehensive strategies for hypertension prevention and management.

Conclusion:

In conclusion, our cross-sectional investigation emphasizes notable differences in the prevalence of hypertension and its associated risk factors between urban and rural populations. Through the identification of distinct factors contributing to elevated blood pressure in each setting, our research underscores the significance of customized interventions. These revelations aid in the continual endeavors to combat the worldwide impact of hypertension, highlighting the essential requirement for strategies tailored to specific contexts to enhance cardiovascular health in varied communities.

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