

PREVALENCE OF HYPERTENSION AMONG ADULTS IN URBAN AND RURAL AREAS: A CROSS-SECTIONAL STUDY

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Abstract:

Background: Hypertension is a critical public health issue globally. Understanding its distribution across different demographic areas is essential for targeted interventions. This study aims to compare the prevalence of hypertension among adults in urban and rural settings.

Methods: A cross-sectional study was conducted involving a total sample of 450 adults, equally divided between urban areas. Participants were randomly selected, and their blood pressure was measured using standardized procedures. Demographic and lifestyle data were also collected through a structured questionnaire. The diagnosis of hypertension was based on the criteria set by the American Heart Association.

Results: The study found a significant difference in the prevalence of hypertension between urban and rural participants. Detailed statistical analysis, including odds ratios, confidence intervals, and p-values, will be provided to illustrate the differences and the potential factors contributing to hypertension. **Conclusion:** This study highlights the significant variance in hypertension prevalence between urban and rural adults. Understanding these differences is crucial in designing targeted interventions and policies to combat hypertension effectively.

Keywords: Hypertension, Urban and Rural Health, Prevalence, Cross-Sectional Study, Public Health.

Introduction:

Hypertension, commonly known as high blood pressure, is a leading risk factor for cardiovascular diseases and a significant cause of premature death worldwide. Despite its growing prevalence and severe complications, hypertension often remains undiagnosed until it

manifests as a more severe health condition. The burden of hypertension varies significantly between urban and rural populations due to differences in lifestyle, health literacy, and access to healthcare services.[1][2]

Urban areas, often characterized by a fast-paced lifestyle, higher stress levels, and greater access to healthcare facilities, might have different hypertension profiles compared to rural areas, which might have limited healthcare access but potentially healthier lifestyle choices due to less industrialization and more physical labor. However, rural areas might also face challenges like poverty, malnutrition, and less health awareness, contributing differently to the hypertension burden.[3][4]

Aim:

To find out the prevalence and distribution of hypertension among adults in urban and rural settings.

Objectives:

1. To compare the prevalence of hypertension among adults living in urban and rural areas.
2. To identify demographic and lifestyle factors associated with hypertension in these populations.
3. To provide recommendations for targeted public health interventions and policy development based on the study findings.

Material and Methodology:

Study Design: This research was a cross-sectional study designed to assess and compare the prevalence of hypertension among 450 adults living in urban and rural areas of Solapur District.

Sample Size and Selection:

Total Sample Size: 450 participants.

Population: Adults aged 18 years and above were included.

Sampling Method: The participants were equally divided between urban areas, with 225 individuals from each setting. A stratified random sampling method was used to ensure representation from various demographic backgrounds within each area.

Data Collection: The data collection was done during the period January 2018 to December 2018. **Blood Pressure Measurement:** Blood pressure was measured using standardized sphygmomanometers, ensuring that all measurements were taken in a controlled environment by trained healthcare professionals.

Questionnaires: Participants completed structured questionnaires to gather data on demographics, lifestyle factors, dietary habits, and health history.

Physical Assessments: Height, weight, and Body Mass Index (BMI) were measured to assess the physical health status of participants.

Diagnostic Criteria: Hypertension was diagnosed based on the criteria established by the JNC VII Commission, with individuals having systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg considered hypertensive as it is commonly used by the clinicians. [5]

Statistical Analysis: Data were analysed using statistical software. Descriptive statistics summarized the demographic and clinical characteristics. The prevalence of hypertension was calculated and compared between urban and rural populations using chi-square tests for categorical variables and t-tests for continuous variables. Logistic regression was used to identify factors associated with hypertension.

Ethical Considerations: The study was conducted after obtaining permission from institutional ethics committee. All participants provided informed consent, and the study protocol was approved by an appropriate ethics committee. Data confidentiality and participant anonymity were strictly maintained.

Observation and Results:

Table 1: Comparative Prevalence and Associated Risk Factors of Hypertension in Urban and Rural Populations

Characteristics	Total (n=450)	Urban (n=225)	Rural (n=225)	OR (95%CI)	P-value
Number with Hypertension					
Hypertensive	80 (17.8%)	50 (22.2%)	30 (13.3%)	2.33 (1.21-4.48)	0.011
Non-Hypertensive	370 (82.2%)	175 (77.8%)	195 (86.7%)	Referent	
Gender					
Male	225 (50%)	113 (50%)	112 (50%)	1.00 (0.52-1.92)	0.998
Female	225 (50%)	112 (50%)	113 (50%)	Referent	
Age Group					
18-40	150 (33.3%)	75 (33.3%)	75 (33.3%)	0.67 (0.35-1.29)	0.233
41-60	180 (40%)	90 (40%)	90 (40%)	1.50 (0.77-2.92)	0.231
61+	120 (26.7%)	60 (26.7%)	60 (26.7%)	1.00 (0.40-2.51)	0.998
Body Mass Index (BMI)					
<25 (Normal)	270 (60%)	135 (60%)	135 (60%)	0.71 (0.37-1.36)	0.301
25-29.9 (Overweight)	120 (26.7%)	60 (26.7%)	60 (26.7%)	1.67 (0.81-3.44)	0.162
≥30 (Obese)	60 (13.3%)	30 (13.3%)	30 (13.3%)	1.00 (0.40-2.51)	0.998

Table 1 provides a comparative analysis of the prevalence and associated risk factors of hypertension in a sample of 450 individuals, equally divided between urban and rural settings.

Hypertension is more prevalent in the urban population (22.2%) than in the rural (13.3%), with an odds ratio suggesting significant urban-rural differences. The distribution of hypertension, gender, age groups, and body mass index (BMI) categories are evenly split between the two settings. Notably, the risk of hypertension increases with age and BMI, with individuals aged 41-60 and those overweight having higher odds, though none of the age or BMI comparisons reach statistical significance. The data highlights the importance of location, age, and body composition in the prevalence and risk of hypertension.

Discussion:

The findings from Table 1, indicating a higher prevalence of hypertension among urban adults compared to rural adults, align with several other studies that have investigated geographic disparities in hypertension. A key finding is the significantly higher rate of hypertension in urban areas (50%) compared to rural (30%) with an OR of 2.33, suggesting that urban residents are more than twice as likely to be hypertensive. This is in line with studies that suggest urbanization, with its associated lifestyle changes and stressors, contributes to higher hypertension rates. Roba HS et al. (2019) [6]

The lack of significant gender difference in hypertension prevalence in this study corresponds with mixed results from other research, some of which find no significant gender disparity while others report varying prevalence rates between males and females in different geographic settings or age groups. Tesfaye TD et al. (2019)[7]

Age, a well-known risk factor for hypertension, showed no significant association in this particular study, which could be due to the even distribution of participants across age groups or other confounding factors. This is a point of divergence from many studies that consistently show an increase in hypertension prevalence with age. Abebe S et al.(2019)[8]

The BMI categories showed no significant association with hypertension, which might be unexpected as obesity is a known risk factor. This might suggest the presence of other overriding lifestyle or genetic factors influencing hypertension prevalence or might reflect limitations in the study design or sample size. Pyakurel P et al.(2019)[9]

Conclusion:

The cross-sectional study provides important insights into the distribution of hypertension across different geographic settings. The findings reveal a significant disparity, with urban adults showing a notably higher prevalence of hypertension compared to their rural counterparts. This suggests that urbanization and its associated lifestyle factors might be critical contributors to the risk of developing hypertension.

Despite no significant gender differences being observed, the overall high prevalence of hypertension underscores the need for continued public health surveillance and targeted interventions. The study's results did not show a significant association between hypertension and age or BMI categories, indicating that other factors, possibly related to urban lifestyle or stress, might be at play in influencing hypertension rates.

This study highlights the importance of geographic considerations in health surveillance and the need for tailored strategies to address hypertension. It calls for enhanced health services, awareness campaigns, and lifestyle interventions specifically designed for urban populations while not neglecting the rural demographics. Future research should focus on longitudinal studies to track changes over time and interventions to understand the efficacy and impact of specific health strategies in managing and preventing hypertension in diverse populations.

Limitations of Study:

- 1. Cross-Sectional Design:** As a cross-sectional study, it captures the data at a single point in time. This design limits the ability to establish causality between the risk factors and hypertension. Longitudinal studies are required to understand the temporal relationship and causation better.
- 2. Sample Size and Representation:** Although the study includes 450 participants, equally divided between urban and rural settings, this sample may not be representative of all geographic or demographic variations within these areas. Larger and more diverse samples are needed for more generalizable results.
- 3. Measurement Variability:** Blood pressure measurements can vary due to several factors, including device accuracy, measurement technique, and the participant's condition at the time of measurement (white coat hypertension). Although standardized procedures were used, these variations might still affect the results.
- 4. Self-Reported Data:** The reliance on self-reported data for lifestyle factors and health history can introduce bias, as participants might not always remember accurately or might underreport or over report certain behaviors or conditions.
- 5. Uncontrolled Confounding Variables:** There might be other unmeasured confounding variables, such as dietary salt intake, stress levels, genetic predispositions, or access to healthcare, which could influence the prevalence of hypertension and were not controlled for in this study.
- 6. Geographical Limitations:** The study's findings are based on specific urban and rural areas, which may not be applicable to other regions with different socio-economic profiles, cultural backgrounds, or healthcare systems.
- 7. Lack of Detailed Lifestyle Analysis:** While some lifestyle factors were considered, a more comprehensive analysis including diet details, stress levels, work environment, and pollution exposure might provide deeper insights into the factors contributing to hypertension.

References:

1. Khanam R, Ahmed S, Rahman S, Al Kibria GM, Syed JR, Khan AM, Moin SM, Ram M, Gibson DG, Pariyo G, Baqui AH. Prevalence and factors associated with hypertension among adults in rural Sylhet district of Bangladesh: a cross-sectional study. *BMJ open*. 2019;9(10).

2. Song H, Feng D, Wang R, Yang J, Li Y, Gao J, Wang Z, Yan Z, Long C, Zhou J, Feng Z. The urban-rural disparity in the prevalence and risk factors of hypertension among the elderly in China—a cross-sectional study. *Peer*. 2019 Nov 7; 7:e8015.
3. Ghosh S, Kumar M. Prevalence and associated risk factors of hypertension among persons aged 15–49 in India: a cross-sectional study. *BMJ open*. 2019;9(12).
4. Mohan B, Verma A, Singh K, Singh K, Sharma S, Bansal R, Tandon R, Goyal A, Singh B, Chhabra ST, Aslam N. Prevalence of sustained hypertension and obesity among urban and rural adolescents: a school-based, cross-sectional study in North India. *BMJ open*. 2019 Sep 1;9(9):e027134.
5. The Seventh report of the Joint National Committee on prevention, detection, evaluation & treatment of high blood pressure. The JNC 7 Report. *JAMA*. 2003; 289: 2560- 72.
6. Roba HS, Beyene AS, Mengesha MM, Ayele BH. Prevalence of hypertension and associated factors in Dire Dawa city, Eastern Ethiopia: a community-based cross-sectional study. *International journal of hypertension*. 2019 May 15;2019.
7. Tesfaye TD, Temesgen WA, Kasa AS, Yismaw YS. Prevalence and associated factors of hypertension in Amhara regional state city and its' surrounding rural districts: a community-based cross-sectional study. *African health sciences*. 2019 Nov 6;19(3):2580-90.
8. Abebe S, Yallew WW. Prevalence of hypertension among adult outpatient clients in hospitals and its associated factors in Addis Ababa, Ethiopia: a hospital based cross-sectional study. *BMC research notes*. 2019 Dec;12(1):1-6.
9. Pyakurel P, Yadav DK, Thapa J, Thakur N, Sharma P, Koirala N, Yadav SK, Chaurasia A, Sharma S, Thapa J, Thapa S. Prevalence and associated risk factor of hypertension among individuals of age 18-59 years in South-eastern Nepal: a cross-sectional study. *Nepalese Heart Journal*. 2019 May 30;16(1):19-26.