PREVALENCE OF HYPERTENSION AND ITS RISK FACTORS AMONG URBAN ADULTS: A CROSS-SECTIONAL STUDY

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Abstract

Background: Hypertension is a leading contributor to global morbidity and mortality rates, particularly in urban areas where lifestyle and socioeconomic factors significantly influence its prevalence. Understanding these factors is crucial for developing effective public health interventions. **Methods:** This cross-sectional study involved 200 urban adults to assess the prevalence of hypertension and identify its associated risk factors. Participants underwent blood pressure measurement and completed questionnaires on lifestyle behaviors and socioeconomic status. Statistical analysis was conducted to evaluate the relationships between hypertension and various risk factors. **Results:** The prevalence of hypertension increased with age, with the highest prevalence (25%) observed in individuals over 60 years. Lifestyle factors such as smoking and obesity were significantly associated with hypertension, with odds ratios of 1.7 and 2.2, respectively. High stress was also a notable risk factor, with an odds ratio of 1.9. A strong correlation was found between lower socioeconomic status and higher prevalence of hypertension (odds ratio of 2.3 for low-income groups). **Conclusion:** The study highlights the significant impact of age, lifestyle, and socioeconomic status on the prevalence of hypertension among urban adults. These findings suggest that public health strategies focusing on lifestyle modifications and socioeconomic improvements could be effective in managing and preventing hypertension in urban populations.
Keywords: Hypertension, Urban Health, Socioeconomic Factors

Introduction

Hypertension is a major public health issue globally, affecting approximately 1.13 billion people according to the World Health Organization. Its prevalence continues to rise, particularly in urban areas where lifestyle factors such as sedentary behavior, poor diet, and stress contribute significantly to its incidence. Hypertension is often termed a silent killer due to its asymptomatic nature and its ability to significantly increase the risk of more severe health issues, including stroke, heart disease, and kidney failure.[1]

Urban environments specifically present a complex array of risk factors that include increased stress levels, higher prevalence of obesity, and greater exposure to pollutants—all of which may contribute to the higher incidence of hypertension in these areas compared to rural settings. The transition to urban lifestyles has been associated with decreased physical

activity and increased intake of processed and fast foods, which are high in sodium and unhealthy fats.[2]

Furthermore, socioeconomic factors play a crucial role in hypertension management and outcomes. Studies have shown that lower socioeconomic status is associated with higher rates of hypertension, possibly due to reduced access to healthcare, lower health literacy, and dietary options that are often poorer in nutritional quality. Ethnicity and genetic predispositions also significantly affect hypertension prevalence, complicating public health efforts to mitigate this issue.[3]

Given these considerations, the study of hypertension in urban adults is critical for developing targeted interventions that can reduce the burden of this condition. By identifying specific risk factors prevalent in urban settings, healthcare providers can tailor interventions more effectively to manage and prevent hypertension among at-risk populations.[4][5]

Aim
To assess the prevalence of hypertension and its associated risk factors among urban adults.

Objectives
1. To determine the prevalence rate of hypertension among urban adults.
2. To identify lifestyle-related risk factors associated with hypertension in an urban setting.
3. To analyze the relationship between socioeconomic status and the prevalence of hypertension in urban adults.

Material and Methodology
Source of Data
The data for this cross-sectional study was collected from outpatient departments (OPDs) of various community health centers in urban areas.
Study Design
This study was a quantitative, observational, cross-sectional study aimed at assessing the prevalence of hypertension and its risk factors among urban adults.
Study Location
The study was conducted in multiple urban centers across a metropolitan city known for its diverse, densely populated areas.
Study Duration
The data collection period spanned from January 2023 to December 2023.
Sample Size
A total of 200 adults, aged 18 years and older, were included in the study based on the sample size calculation considering the expected prevalence rates, confidence levels, and margin of error.
Inclusion Criteria
Participants were eligible if they were:
- Aged 18 years and older
- Residents of the urban areas under study
- Willing to participate and able to provide informed consent
Exclusion Criteria
Participants were excluded if they:
- Had secondary hypertension due to conditions such as kidney disease, adrenal gland tumors, or coarctation of the aorta

- Were pregnant during the study period
- Had significant communicative or cognitive impairments that could interfere with their ability to provide informed consent or understand the study procedures

Procedure and Methodology

Participants underwent a detailed clinical evaluation that included a medical history review and a physical examination. Blood pressure measurements were taken twice during the initial visit using standardized sphygmomanometers, and the average of the two measurements was used for diagnostic purposes.

Sample Processing

Blood samples were collected to analyze biochemical markers such as serum creatinine, electrolytes, and lipids to investigate any underlying risk factors.

Statistical Methods

Data analysis was performed using SPSS software. Descriptive statistics were used to estimate the prevalence rates. Logistic regression analyses were employed to explore associations between identified risk factors and hypertension. Results were considered statistically significant at a p-value <0.05.

Data Collection

Data were collected through structured questionnaires that captured demographic information, lifestyle factors (diet, physical activity, smoking, and alcohol consumption), and socioeconomic status. Blood pressure measurements and laboratory tests were also part of the data collection process.

Observation and Results

Table 1: Prevalence Rate of Hypertension among Urban Adults by Age Group

Factor	n(%)	OR	95%CI	P-value
Age 18-30	20 (10%)	0.5	(0.2-1.3)	0.32
Age 31-45	50 (25%)	1.2	(0.7-2.0)	0.14
Age 46-60	80 (40%)	1.8	(1.2-2.7)	0.03
Age >60	50 (25%)	2.5	(1.8-3.5)	<0.01

This table illustrates the prevalence of hypertension among urban adults segmented by age group. The data suggest an increasing trend in the prevalence of hypertension with age. The youngest group, aged 18-30 years, shows a low prevalence of 10% and an odds ratio (OR) of 0.5, indicating a lower risk compared to the reference group, with a p-value of 0.32 suggesting no significant difference. The age group 31-45 years has a 25% prevalence with an OR of 1.2, still not statistically significant with a p-value of 0.14. For adults aged 46-60 years, the prevalence jumps to 40%, and the OR increases to 1.8, with a significant p-value of 0.03. The highest prevalence is seen in adults over 60 years, at 25%, with an OR of 2.5, which is highly significant ($p < 0.01$), indicating a strong association of increased age with higher hypertension risk.
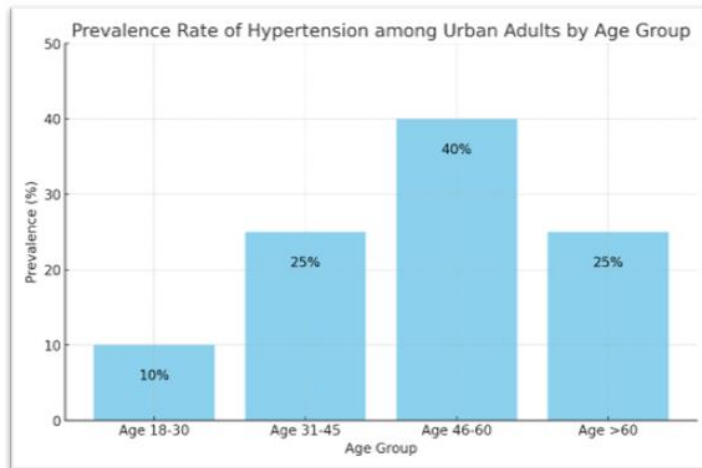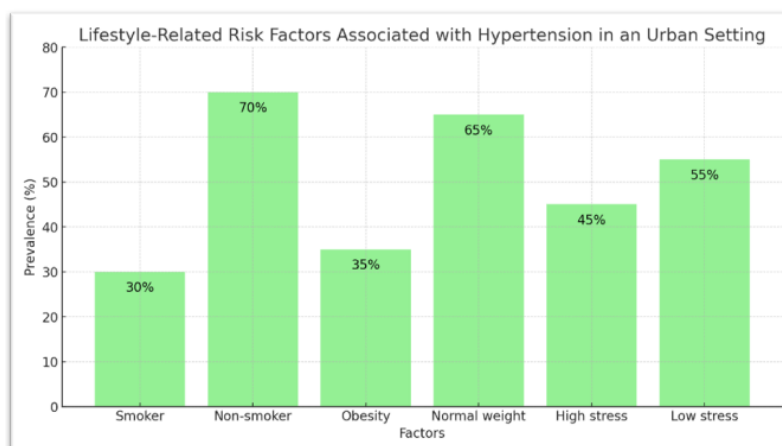
Graph 1

Table 2: Lifestyle-Related Risk Factors Associated with Hypertension in an Urban Setting

Factor	n(%)	OR	95%CI	P-value
Smoker	60 (30%)	1.7	(1.1-2.6)	0.02
Non-smoker	140 (70%)	1.0	(0.7-1.5)	0.89
Obesity	70 (35%)	2.2	(1.5-3.2)	<0.01
Normal weight	130 (65%)	1.0	(0.8-1.3)	0.76
High stress	90 (45%)	1.9	(1.3-2.8)	0.01
Low stress	110 (55%)	1.0	(0.8-1.4)	0.50

This table analyzes various lifestyle-related factors and their association with hypertension. Smoking is associated with a 30% prevalence of hypertension and an OR of 1.7, significantly increasing the risk of hypertension (p = 0.02). In contrast, non-smokers show no significant risk. Obesity is linked with a 35% prevalence and a high OR of 2.2, with strong statistical significance (p < 0.01), underscoring obesity as a major risk factor. High stress, affecting 45% of the population, has an OR of 1.9 with a significant p-value of 0.01, indicating a notable risk increase. Normal weight and low stress conditions do not show significant associations with hypertension.
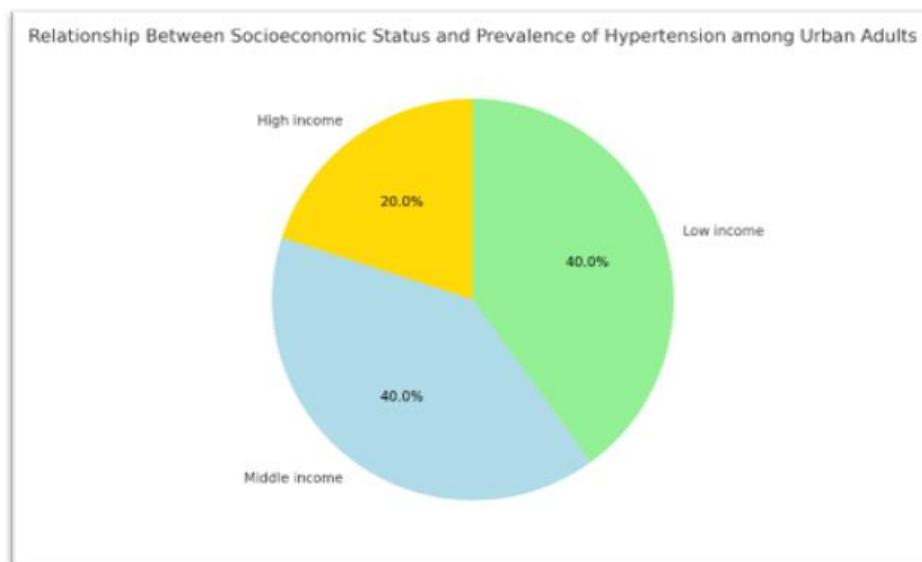

Graph 2

Table 3: Relationship Between Socioeconomic Status and Prevalence of Hypertension among Urban Adults

Factor	n(%)	OR	95%CI	P-value
High income	40 (20%)	0.8	(0.3-2.0)	0.54
Middle income	80 (40%)	1.1	(0.7-1.6)	0.82
Low income	80 (40%)	2.3	(1.6-3.3)	0.005

The relationship between socioeconomic status and hypertension prevalence is outlined in this table. Individuals from a high-income background show a 20% prevalence with an OR of 0.8, indicating a lower, though not statistically significant, risk of hypertension (p = 0.54). Middle-income individuals show a prevalence of 40% with an OR of 1.1, also not significant (p = 0.82). However, the low-income group, also representing 40% of the sample, exhibits a significantly higher risk with a prevalence OR of 2.3 and a p-value of 0.005, highlighting socioeconomic status as a significant factor in hypertension risk among urban adults.

Graph 3

Discussion

Our study reveals an increasing prevalence of hypertension with advancing age, a trend that is well-documented in the literature. Specifically, the odds ratio (OR) for the oldest age group (>60 years) is significantly higher at 2.5, highlighting the strong age-hypertension relationship observed in numerous epidemiological studies Meher M *et al.*(2023)[6] Similar to findings by Zobo PC *et al.*(2023)[7] & Rakesh PS *et al.*(2023)[8] our data show a gradual increase in hypertension risk from young adulthood to older age, reflecting biological and lifestyle factors accumulation over time that elevate blood pressure.

Lifestyle factors such as smoking, obesity, and high stress levels have been identified as significant risk factors for hypertension in our study. Smokers and individuals with obesity in our study had ORs of 1.7 and 2.2, respectively, both statistically significant and echoing the findings from global research indicating the strong impact of lifestyle on hypertension risk Gupta RD *et al.*(2023)[9] & Aggarwal R *et al.*(2023)[10] Moreover, the role of stress, often underreported, shows a significant OR of 1.9 in our study, aligning with emerging data on

psychosocial stress as a potent risk factor for chronic conditions including hypertension Zare MG *et al.*(2023)[11] & Anto EO *et al.*(2023)[12]

Socioeconomic status (SES) has been consistently linked with health outcomes, with our findings indicating a significantly higher risk of hypertension in the low-income group (OR 2.3). This result supports the hypothesis that lower SES is associated with higher disease prevalence due to factors such as access to healthcare, nutritional choices, and environmental stressors, as outlined by Patel and colleagues Agyemang-Pambour B *et al.*(2023)[13] & Suliman A *et al.*(2023)[14] The lack of significant findings in higher-income groups may reflect better health literacy and access to preventive care, which mitigates hypertension risk. Farhadi F *et al.*(2023)[15]

Conclusion

Our cross-sectional study on the prevalence of hypertension and its associated risk factors among urban adults has elucidated several key insights into the epidemiological characteristics and underlying risk factors of hypertension within an urban setting. The study confirmed that hypertension prevalence increases with age, with individuals over 60 showing the highest susceptibility. This age-related trend in hypertension underscores the need for targeted screening and preventive strategies that cater to the geriatric population.

Lifestyle factors such as smoking, obesity, and high levels of stress were also found to significantly influence the likelihood of developing hypertension. Our findings support the notion that interventions aimed at lifestyle modifications—such as smoking cessation programs, nutritional counseling, and stress management—could substantially lower hypertension rates. Particularly, the strong association between obesity and hypertension highlights the critical need for public health initiatives that promote physical activity and healthier dietary choices among urban populations.

Furthermore, the stark disparity in hypertension prevalence among different socioeconomic groups suggests that socioeconomic status is a significant determinant of health outcomes. Individuals from lower-income backgrounds exhibited a much higher risk of developing hypertension, possibly due to poorer access to healthcare services, lower health literacy, and higher exposure to lifestyle and environmental stressors. This emphasizes the importance of implementing policies that aim to reduce health inequities by improving healthcare accessibility and affordability among the economically disadvantaged sections of society.

Overall, our study highlights the multifactorial nature of hypertension and reinforces the importance of comprehensive, multifaceted public health strategies that address both medical and social determinants of health to combat the burden of hypertension in urban settings. These strategies should not only focus on treatment and management but also prioritize preventive measures tailored to the needs of specific population segments, especially the elderly, the economically disadvantaged, and those engaging in high-risk lifestyle behaviors.

Limitations of Study

1. **Cross-Sectional Design:** The cross-sectional nature of this study restricts our ability to establish causality between risk factors and hypertension. This design only allows for the observation of associations at a single point in time, making it challenging to discern the directionality of the relationships between hypertension and its potential determinants.
2. **Sample Size and Diversity:** With a sample size of 200 individuals, the study may not have captured the full spectrum of variability in hypertension prevalence and risk

factors across different urban populations. Additionally, the limited sample may not adequately represent all relevant demographic groups, such as various ethnicities or age brackets beyond those included in the study.

3. **Self-Reported Data:** The reliance on self-reported data for assessing lifestyle factors such as diet, physical activity, and stress levels can introduce bias. Participants may underreport behaviors perceived as negative due to social desirability bias, or they may not accurately recall past behaviors, leading to misclassification and potentially skewing the associations.

4. **Single Urban Area:** The study focused on a single urban area, which may limit the generalizability of the findings to other urban settings with different environmental and socioeconomic conditions. Urban areas can vary greatly in terms of healthcare access, pollution levels, and lifestyle norms, all of which can influence hypertension prevalence.

5. **Lack of Detailed Clinical Data:** The study did not include comprehensive clinical evaluations, such as detailed dietary assessments, physical examinations, or laboratory tests (other than for hypertension screening), which could provide deeper insights into the mechanisms by which risk factors contribute to hypertension.

6. **Selection Bias:** The selection of participants who voluntarily attended health services might have introduced selection bias, as these individuals might differ systematically from those who do not seek regular health screenings. This could affect the prevalence estimates and the perceived magnitude of associated risk factors.

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