



ORIGINAL ARTICLE

Prevalence and associated factors of hypertension in young adults: A cross-sectional study.

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ABSTRACT... Objective: To explore the relationships between hypertension and modifiable risk factors such as daily smoking, sedentary lifestyle and obesity in young adults. **Study Design:** Cross-sectional study. **Setting:** Akhter Saeed Teaching Hospital, Lahore. **Period:** July 2022 to Dec 2022. **Material & Methods:** Cross-sectional analysis was conducted on a sample population of 500 individuals, aged 18-39. A standardized, self-administered questionnaire was used to gather information on tobacco usage, physical activity level, parental history of hypertension, and other relevant demographic information. Additional assessments such as dietary habits were conducted through face-to-face interviews. Multivariate logistic regression models were employed to assess the associations between hypertension and various risk factors, controlling for age, gender and BMI categories. **Results:** The study corroborated the significant association between daily smoking and hypertension (aOR = 1.7, 95% CI 1.3–2.4, p = 0.001) and revealed an 80% increase in hypertension risk associated with a sedentary lifestyle (OR = 1.8, 95% CI 1.2–2.7, $\chi^2 = 8.21$, p = 0.004). Obesity was also strongly associated with hypertension (aOR = 3.2, 95% CI 2.1–4.8, p < 0.001). There was no significant difference between males and females in terms of hypertension risk. **Conclusion:** Hypertension is significantly associated with smoking, sedentary lifestyle and obesity.

Key words: Hypertension, Multivariate Logistic Regression, Obesity, Smoking, Sedentary Lifestyle, Young Adults.

INTRODUCTION

Hypertension, or elevated blood pressure, represents a critical issue in global health, affecting an estimated 1.13 billion people worldwide.¹ This condition is more than a mere numerical aberration in blood pressure readings; it acts as a pivotal risk factor for several severe health conditions such as cardiovascular diseases, strokes, kidney dysfunction, and other chronic ailments.² The far-reaching implications of hypertension have catalyzed extensive scientific exploration, focusing on the detection of risk factors and the innovation of preventive interventions.

Recognized as a strong risk factor for cardiovascular maladies, including hypertension, tobacco consumption presents a clear danger to health.³ The relationship between daily cigarette

consumption and hypertension risk manifests in a dose-response pattern, as reported in various studies.⁴ The connection between alcohol and hypertension is intricate, with heavy drinking acting as a distinct risk factor⁵, excessive consumption is strongly associated with high blood pressure through mechanisms involving the sympathetic nervous system, vascular functionality, and electrolyte balance.^{6,7} The insidious rise of sedentary lifestyles has also contributed to the increasing prevalence of hypertension.^{8,9}

Genetic and demographic factors including age, gender and obesity exhibits a direct association with hypertension.¹⁰⁻¹⁵

While significant progress has been made in understanding hypertension, there remains a need for a more profound and nuanced

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comprehension of the interplay between lifestyle, genetics, and demographic factors. This study explores the relationships between hypertension and modifiable risk factors such as daily smoking, sedentary lifestyle and obesity in young adults.

MATERIAL & METHODS

A cross-sectional study was conducted from July 2022 to Dec 2022 in Department of Psychology of Akhtar Saeed Teaching Hospital Lahore. A total of 500 individuals were enrolled in the study, adhering to ethical guidelines and obtaining informed consent. The study population consisted of young adults aged between 18-39 years, selected from a diverse demographic background. Patients younger than 18 years were excluded. The study design was approved the Hospital board (R/N:10-21(21-06-22)).

A standardized, self-administered questionnaire was used to gather information on tobacco usage, physical activity level, parental history of hypertension, and other relevant demographic information. Additional assessments such as dietary habits were conducted through face-to-face interviews.

Blood pressure was measured using a calibrated sphygmomanometer. Hypertension was defined as systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg. BMI was calculated using the standard formula (weight in kilograms divided by height in meters squared) and categorized into normal, overweight, and obese.

All the data was analyzed by SPSS version 23. Basic descriptive statistics were used to summarize the demographic and lifestyle characteristics of the participants. Associations between categorical variables such as tobacco usage and hypertension were analyzed using chi-square tests. Multivariate logistic regression was employed to control for confounding variables, including age, gender and BMI. Adjusted odds ratios (aOR) were calculated to estimate the strength of associations. Pearson's correlation coefficient was used to assess the relationship between the number of cigarettes smoked daily

and the prevalence of hypertension. A p-value of less than 0.05 was considered statistically significant for all analyses.

RESULTS

The study incorporated a balanced sample of 500 young adults aged 18 to 39 years with the mean age of 28.7 years. The sample consisted of an equal distribution of gender, with 250 males (50%, 95% CI 45.6%-54.4%) and 250 females (50%, 95% CI 45.6%-54.4%), ensuring gender diversity. The demographic factors of participants is shown in Table-I.

The prevalence of hypertension was found to be 15.7% (n = 79) amongst the young adults in the sample. Of these, 41 were male and 38 were female, illustrating a slightly higher prevalence among males compared to females. Within the tobacco-using population (n = 200), hypertension was diagnosed in 20% (n = 40) (Table-II). The odds ratio for hypertension in tobacco users versus non-users was calculated as OR = 1.6 (95% CI 1.1–2.3), indicating a 60% increase in the likelihood of hypertension among those who use tobacco (Figure-1).

Within the subset of sedentary lifestyle 28% (n=35) were diagnosed with hypertension. To contrast, in the non-sedentary group (n = 375), hypertension was present in 15% (n = 56), providing an initial indication of a higher prevalence of hypertension among individuals with a sedentary lifestyle (Table-II). The adjusted odds ratio (aOR) for a sedentary lifestyle was found to be 1.8 (95% CI 1.2–2.7, p = 0.004), reflecting an 80% increase in hypertension risk associated with a lack of physical activity (Figure-1).

The prevalence of hypertension was notably higher at 40% (n = 60) in individuals with parental history of hypertension. The statistical analysis demonstrated a substantial risk, with an odds ratio of 2.0 (95% CI 1.4–2.9, $\chi^2 = 15.29$, p < 0.001). This suggests that individuals with a parental history of hypertension are twice as likely to be hypertensive compared to those without such history.

Factor	N (%)
Gender	
Male	250 (50%)
Female	250 (50%)
Age	
18-29 years	273 (54.6%)
30-39 years	227 (45.4%)
Socio-economic status	
Low (Rs 4,000,000)	125 (25%)
Medium (Rs 9,600,000)	250 (50%)
High-income (Rs 16,000,000)	125 (25%)
Obesity	100 (20%)
Smoking status	
Daily smokers	130 (65%)
Former smoker	20 (10%)
Occasional smoker	50 (25%)
Non-smokers	300 (60%)
Sedentary lifestyle	125 (25%)
Non-sedentary lifestyle	375 (75%)
Parental history of hypertension	150 (30%)

Table-I. Patient demographic factors

	Hypertension N (%)
Gender	
Male	41 (51.9%)
Female	38 (48.1%)
Obese people	35 (35%)
Smokers (former, current, occasional)	40 (20%)
Sedentary lifestyle	35 (28%)
Non-sedentary lifestyle	56 (15%)
Parental history of hypertension	60 (40%)

Table-II. Prevalence of hypertension

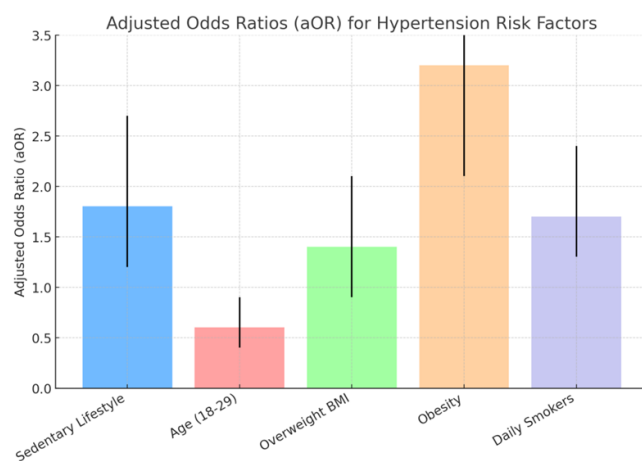


Figure-1. Adjusted odds ratio for risk factors

DISCUSSION

This research provides essential insights into the

prevalence and determinants of hypertension within a young adult demographic. The associations uncovered between hypertension and numerous lifestyle considerations—such as obesity, heavy alcohol consumption, tobacco use, and sedentary lifestyle—accentuate the necessity for multifaceted interventions.

A robust correlation with hypertension was found with obesity (aOR = 3.2), corroborating existing literature and reinforcing the pivotal role of weight management in controlling hypertension. The study’s findings pertaining to daily smoking bring substance abuse into focus as an area needing specific interventions. The delineation by smoking types further elucidates the pronounced effect of daily smoking.

The linkage between a lack of physical activity and hypertension (aOR = 1.8) supplements prior evidence, highlighting the vital importance of endorsing regular physical activity. The diminished propensity for hypertension in the younger cohort (18-29) might be indicative of lifestyle variations or innate physiological resilience. The escalating prevalence within the 30-39 age bracket accentuates the urgency for preemptive measures. Contrary to certain earlier studies, gender did not surface as a meaningful factor in this study. This discrepancy may emanate from cultural, demographic, or methodological disparities, warranting additional investigation.

The discerned relationship between a parental history of hypertension and the condition itself (OR = 2.0) aligns with theories related to genetic predisposition, underscoring the significance of family medical history in risk evaluation and preventive measures.

The complex interplay of hypertension risk factors calls for an integrative and personalized approach. Tailored interventions focusing on weight control, substance abuse management, physical activity promotion, and genetic risk understanding are pivotal. The potential of educational and community-centered programs in cultivating awareness and inducing behavioral modifications cannot be overstated.

CONCLUSION






Hypertension is significantly associated with smoking, sedentary lifestyle and obesity.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
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2	Muhammad Abdullah Shah	Design study.	
3	Haider Tanvir	Data collection.	
4	Awais Amjad	Review and Process.	
5	Noor e Sehar Butt	Data collection.	
6	Fahad Asim	Conceived.	