RESEARCH PAPER

Association between Lifestyle Habits and Hypertension among Patients Attending a Tertiary Care Centre

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Abstract

Background: Hypertension is one of the leading non-communicable diseases and a major risk factor for cardiovascular morbidity and mortality worldwide. Lifestyle factors such as unhealthy diet, physical inactivity, tobacco use, alcohol consumption, obesity, stress, and inadequate sleep contribute significantly to the development and progression of hypertension.

Aim: To assess the association between lifestyle habits and hypertension among patients attending a tertiary care centre.

Materials and Methods: A hospital-based cross-sectional observational study was conducted among 300 adult patients attending the outpatient department of a tertiary care centre over a period of six months. Participants aged above 18 years were included after obtaining written informed consent. Data were collected using a pre-validated structured questionnaire consisting of socio-demographic details, dietary habits, physical activity, smoking, alcohol consumption, sleep pattern, stress level, and body mass index (BMI). Blood pressure was measured using standard guidelines. Statistical analysis was performed using SPSS version 25. Chi-square test and logistic regression analysis were used to determine associations. A p-value <0.05 was considered statistically significant.

Results: Out of 300 participants, 168 (56%) were hypertensive. Sedentary lifestyle, obesity, smoking, alcohol consumption, high salt intake, inadequate physical activity, and poor sleep quality were significantly associated with hypertension ($p<0.05$). Hypertension was more prevalent among participants with BMI ≥ 25 kg/m² and those reporting low physical activity levels. Logistic regression analysis demonstrated obesity and high salt intake as independent predictors of hypertension.

Conclusion : Lifestyle factors including sedentary behaviour, obesity, smoking, alcohol intake, poor sleep, and unhealthy dietary habits were significantly associated with hypertension. Early lifestyle modification, health education, and regular screening programs are essential for prevention and control of hypertension.

Keywords : Hypertension; Lifestyle habits; Obesity; Physical activity; Smoking; Tertiary care centre
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Introduction

Hypertension is a major global public health problem affecting more than one billion individuals worldwide and contributes significantly to cardiovascular diseases, stroke, renal disorders, and premature mortality.[1] It is commonly referred to as a "silent killer" because many affected individuals remain asymptomatic until complications develop.[2]

The prevalence of hypertension has increased substantially in developing countries due to urbanization, lifestyle changes, unhealthy dietary practices, physical inactivity, obesity, stress, tobacco use, and alcohol consumption.[3] In India, hypertension represents a major burden on the healthcare system and is one of the leading risk factors for cardiovascular morbidity and mortality.[4] Lifestyle habits play a crucial role in the development and progression of hypertension. Excessive salt intake, consumption of processed foods, inadequate intake of fruits and vegetables, lack of exercise, smoking, alcohol use, obesity, psychological stress, and poor sleep quality are known modifiable risk factors contributing to elevated blood pressure.[5] Sedentary lifestyle and obesity are increasingly common among adults due to changing occupational patterns and reduced physical activity.[6] Previous studies have shown that obesity and physical inactivity are strongly associated with increased risk of hypertension.[7] Smoking and alcohol consumption may

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further contribute to endothelial dysfunction and vascular changes leading to elevated blood pressure.[8] Similarly, chronic stress and inadequate sleep have been implicated in activation of the sympathetic nervous system and hormonal imbalance, thereby increasing cardiovascular risk.[9] Identification of modifiable lifestyle factors associated with hypertension is essential for implementing preventive strategies and promoting healthy behavioural practices among the population. Although several studies have evaluated hypertension prevalence, limited data are available regarding the combined influence of lifestyle habits among patients attending tertiary healthcare settings. Therefore, the present study was conducted to assess the association between lifestyle habits and hypertension among patients attending a tertiary care centre.

Materials and Methods

A hospital-based cross-sectional observational study was conducted in the outpatient department of a tertiary care centre over a period of six months from August 2025 to January 2026.

The study population included adult patients aged above 18 years attending the OPD during the study period. Patients willing to provide written informed consent were included in the study. Pregnant women, critically ill patients, and individuals with secondary hypertension or severe psychiatric illness were excluded from the study.

Sample Size Calculation: Sample size was calculated using the formula:

$n = Z^2pq/d^2$

Considering the prevalence of hypertension as 50%, confidence interval of 95%, and allowable error of 6%, the minimum sample size obtained was 267. Considering possible incomplete responses, the final sample size was rounded to 300 participants.

Convenient sampling technique was used for participant recruitment.

Data were collected using a pre-validated structured questionnaire comprising:

1. Socio-demographic details
2. Dietary habits including salt intake and junk food consumption
3. Physical activity pattern
4. Smoking and alcohol consumption history
5. Sleep duration and sleep quality
6. Stress level assessment
7. Anthropometric measurements including height, weight, and BMI

Blood pressure was measured using a calibrated sphygmomanometer according to standard guidelines. Participants with systolic blood pressure ≥140 mmHg and/or diastolic blood pressure ≥90 mmHg or those on antihypertensive medication were considered hypertensive.

Data were entered into Microsoft Excel and analysed using SPSS version 25. Descriptive statistics including frequency, percentage, mean, and standard deviation were calculated. Chi-square test and logistic regression analysis were applied to determine associations between lifestyle factors and hypertension. A p-value less than 0.05 was considered statistically significant.

Institutional Ethical Committee approval was obtained prior to commencement of the study.

Results

The present study included 300 participants with a mean age of 46.2 ± 12.4 years. Among them, 172 (57.3%) were males and 128 (42.7%) were females.

Out of 300 participants, 168 (56%) were found to be hypertensive. Sedentary lifestyle was observed in 182 (60.7%) participants, while obesity (BMI ≥25 kg/m²) was present in 136 (45.3%) participants.

Smoking history was reported by 94 (31.3%) participants and alcohol consumption by 88 (29.3%) participants. High salt intake was identified in 162 (54%) participants.

A statistically significant association was observed between hypertension and obesity ($p<0.001$), sedentary lifestyle ($p=0.002$), smoking ($p=0.01$), alcohol consumption ($p=0.03$), high salt intake ($p<0.001$), and poor sleep quality ($p=0.004$).

Participants with obesity demonstrated significantly higher prevalence of hypertension compared to participants with normal BMI.

Table 1. Distribution of Participants According to Hypertension Status

Hypertension Status	Frequency	Percentage
Hypertensive	168	56%
Normotensive	132	44%

Table 2. Lifestyle Factors Among Study Participants

Lifestyle Factor	Frequency	Percentage
Sedentary lifestyle	182	60.7%
Obesity	136	45.3%
Smoking	94	31.3%
Alcohol consumption	88	29.3%
High salt intake	162	54%

Table 3. Association Between Obesity and Hypertension

BMI Category	Hypertensive	Normotensive	p-value
BMI ≥25 kg/m²	104	32	<0.001
BMI <25 kg/m²	64	100	

Table 3 demonstrates the association between obesity and hypertension among the study participants. Among participants with BMI ≥25 kg/m², 104 were hypertensive while only 32 were normotensive. In contrast, among participants with BMI <25 kg/m², 64 were hypertensive and 100 were normotensive.

Statistical analysis using the Chi-square test revealed a statistically highly significant association between obesity and hypertension ($p<0.001$). This indicates that participants with higher BMI were significantly more likely to develop hypertension compared to individuals with normal BMI.

The findings suggest that obesity is an important modifiable risk factor contributing to elevated blood pressure and increased cardiovascular risk.

Discussion

The present study evaluated the association between lifestyle habits and hypertension among patients attending a tertiary care centre. Hypertension was observed in 56% of participants, indicating a high burden of disease among adults attending OPD services. Sedentary lifestyle and obesity were significantly associated with hypertension. Similar findings were reported by Hall et al.[10] who demonstrated that obesity contributes substantially to increased blood pressure through activation of neurohormonal and inflammatory pathways. Physical inactivity has also been identified as an important risk factor for hypertension in several epidemiological studies.[11]

The present study observed significant association between high salt intake and hypertension. Excessive dietary sodium intake contributes to fluid retention, increased vascular resistance, and elevated blood pressure.[12] A study by He and MacGregor[13] similarly demonstrated that reduction in salt intake significantly lowers blood pressure levels.

Smoking and alcohol consumption were also significantly associated with hypertension in the present study. Tobacco smoking causes endothelial dysfunction and arterial stiffness, while excessive alcohol intake contributes to sympathetic overactivity and vascular changes.[14]

Poor sleep quality demonstrated significant relationship with hypertension. Sleep deprivation and chronic stress may activate sympathetic nervous system responses leading to persistent elevation of blood pressure.[15]

The findings emphasize the importance of lifestyle modification strategies including regular exercise, healthy dietary practices, weight reduction, smoking cessation, stress management, and sleep hygiene for prevention and control of hypertension.

However, the study had certain limitations including single-centre design, convenient sampling technique, and reliance on self-reported lifestyle habits. Further multicentric prospective studies are recommended.

Conclusion

Lifestyle habits including obesity, sedentary behaviour, smoking, alcohol intake, high salt consumption, and poor sleep quality were significantly associated with hypertension among patients attending a tertiary care centre. Early screening, lifestyle counselling, health education, and behavioural interventions are essential to reduce the burden of hypertension and associated cardiovascular complications.

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