

IMPACT OF LIFESTYLE FACTORS ON THE PREVALENCE OF HYPERTENSION AMONG YOUNG ADULTS

Prof. Renu Verma

Department of Zoology

Meerut College, Meerut (U.P.)

Email: renu20081970@gmail.com

Sneha

Department of Zoology

Meerut College, Meerut (U.P.)

Email: sneha2219singh@gmail.com

Abstract

Hypertension is a widespread non-communicable disorder that substantially increases the risk of cardiovascular illness and premature mortality worldwide. Although traditionally associated with older adults, recent lifestyle changes have contributed to an increasing risk of elevated blood pressure among young adults.

This study was carried out to evaluate the influence of lifestyle factors on blood pressure status and to estimate the prevalence of hypertension in young adults between 18 and 30 years of age residing in Meerut, Uttar Pradesh.

The study adopted a cross-sectional observational design and included fifteen participants aged 18–30 years. Participants were selected through convenience sampling after obtaining informed consent. Data regarding demographic characteristics and lifestyle practices, including dietary habits, physical activity, sleep duration, perceived stress, smoking, alcohol consumption, family history of hypertension, and screen time before sleep, were collected using a structured questionnaire. Blood pressure measurements were obtained with a validated digital sphygmomanometer and interpreted in accordance with the Indian Guidelines on Hypertension-IV (2019).

Among the fifteen participants, 60% were females and 40% were males. Blood pressure assessment revealed that 46.7% had optimal blood pressure, 40.0% had normal blood pressure, and 13.3% had high-normal blood pressure, while no participant met the diagnostic criteria for hypertension. Most participants reported healthy lifestyle practices, including regular physical activity, infrequent consumption of fast food, and complete absence of smoking and alcohol consumption. However, prolonged mobile phone or laptop use before bedtime (60%) and moderate perceived stress (40%) were commonly observed. Although hypertension was not detected among the participants included in this

Reference to this paper
should be made as follows:

Received: 11.08.2026

Approved: 14.09.2026

**Prof. Renu Verma
Sneha**

IMPACT OF LIFESTYLE FACTORS ON
THE PREVALENCE OF HYPERTENSION
AMONG YOUNG ADULTS

Article No. 35

RJPSS April - Sept. 2026,

Vol. LI No. 2,

Pg. 313-324

Similarity Check - 03%

Online available at:

[https://anubooks.com/
journal-volume/rjpss-2026-
vol-li-no-2-sept-2026](https://anubooks.com/journal-volume/rjpss-2026-vol-li-no-2-sept-2026)

[https://doi.org/10.31995/
rjpss.2026.v51i02.035](https://doi.org/10.31995/rjpss.2026.v51i02.035)

**This article has been peer-reviewed by the Review Committee of RJPSS.*

study. The presence of high-normal blood pressure and several modifiable lifestyle risk factors suggests the importance of early preventive strategies. Adopting healthy lifestyle practices during early adulthood, such as engaging in regular physical exercise, consuming a well-balanced diet, obtaining sufficient sleep, managing stress effectively, and monitoring blood pressure at regular intervals, can help reduce the risk of hypertension and promote long-term cardiovascular health.

Keywords

Hypertension; Blood Pressure; Young Adults; Lifestyle Factors; Physical Activity; Diet; Stress; Cardiovascular Health; Cross-Sectional Study

Introduction

Hypertension is among the most common non-communicable health conditions affecting populations worldwide and is a significant cause of cardiovascular complications and early death. It is characterized by persistently elevated arterial blood pressure and is strongly associated with an increased chance of developing heart diseases, stroke, poor heart function, and long-lasting kidney disorders. Globally, hypertension is recognized as the third most important of the six major risk factors contributing to cardiovascular disease (Megha Nand Meher et al., *Cureus*, 2023). The World Health Organization (WHO 2023) estimates that nearly 1.28 billion adults are living with hypertension across different countries and a large number of these individuals remain either undiagnosed or do not receive adequate treatment.

The prevalence and absolute burden of hypertension is rising globally, especially in low- and middle-income countries (LMICs) (Katherine T. Mills, A. Stefanescu & He, J. 2020).

Hypertension was once thought to be mainly a health problem of adults in their middle and later years; however, recent research has revealed a rising prevalence among young adults. Rapid urbanization, technological advancements, changing dietary patterns, and increasingly sedentary lifestyles have contributed to a rise in elevated blood pressure among individuals in early adulthood. Young adults often experience academic demands, occupational stress, irregular meal timings, inadequate sleep, and prolonged exposure to electronic devices, all of which may adversely influence cardiovascular health. Since lifestyle habits established during this stage frequently persist throughout life, early adulthood represents a critical period for implementing preventive interventions.

The development of hypertension is multifactorial, resulting from complex interactions between genetic predisposition and environmental influences. Although non-modifiable factors such as age, sex, and genetic predisposition influence an individual's risk of developing hypertension, modifiable lifestyle factors are key contributors to the onset and progression of elevated blood pressure.

Physical inactivity, unhealthy dietary practices, excessive sodium intake, obesity, inadequate sleep, psychological stress, tobacco use, alcohol consumption, and prolonged sedentary behaviour have consistently been identified as important determinants of hypertension. Unlike genetic factors, these behavioural risk factors can be effectively modified through appropriate lifestyle interventions, making them primary targets for disease prevention. A large number of people with hypertension still do not get proper medical care, and many are unable to maintain normal blood pressure levels. Improving the prevention and management of hypertension can lead to substantial health, well-being, and economic benefits (World Health Organization, 2023).

Materials and Methods

Study Design

To understand the association between lifestyle behaviours and blood pressure, a cross-sectional observation study was conducted among young adults. The study focused on identifying common modifiable lifestyle behaviours that may influence the future risk of hypertension in apparently healthy individuals.

Study Area and Duration

The study was carried out in Meerut, Uttar Pradesh, India, among young adults residing in the city. Data collection was conducted during the academic session 2025–2026 using a structured questionnaire and blood pressure measurements.

Study Population

The study population comprised young adults aged between 18 and 30 years. Both male and female participants were included to obtain information regarding demographic characteristics, lifestyle habits, and blood pressure status.

Sample Size and Sampling Technique

A total of 15 participants were enrolled in the study through convenience sampling. Individuals who voluntarily agreed to participate and completed the questionnaire with all required information were included in the study.

Inclusion Criteria

Participants fulfilling the following criteria were included in the study:

- Young adults aged 18–30 years.
- Male and female participants.
- Individuals who voluntarily agreed to participate.
- Participants providing complete questionnaire responses.

Exclusion Criteria

The following individuals were excluded:

- Individuals younger than 18 years or older than 30 years.
- Participants with incomplete questionnaire responses.
- Individuals who declined participation or did not provide consent.

Data Collection Tool

Data were gathered using a structured questionnaire designed to collect information on participants' demographic characteristics and lifestyle factors that may be associated with hypertension.

The questionnaire included information on age, gender, dietary habits, physical activity, sleep duration, perceived stress, smoking status, alcohol consumption, family history of hypertension, and screen time before bedtime. Blood pressure measurements were obtained separately from each participant.

Blood Pressure Measurement

Blood pressure was recorded using a validated measurement method while following a standardized procedure to ensure accuracy, consistency and reliability in the readings.

Each participant was requested to rest in a seated position for nearly five minutes before the assessment. The measurement was performed with the arm positioned at heart level, and systolic as well as diastolic blood pressure values were recorded in millimetres of mercury (mmHg). Blood pressure categories were assigned according to the **Indian Guidelines on Hypertension-IV (2019)**.

Study Variables

The following variables were evaluated during the study:

Dependent Variable

- Blood pressure status

Independent Variables

- Age
- Gender
- Body Mass Index (BMI)
- Dietary habits
- Fast-food consumption
- Physical activity
- Sleep duration
- Perceived stress

- Smoking status
- Alcohol consumption
- Family history of hypertension
- Screen time before sleeping

Ethical Considerations

Participation in the study was entirely voluntary. A clear explanation of the study objectives was provided to all participants before data collection, and verbal informed consent was obtained from each participant before participation. The privacy of all participants was protected by maintaining confidentiality and anonymity throughout the study, and no personally identifiable information was used during data analysis or included in the final report.

Statistical Analysis

The collected data were entered into Microsoft Excel for organization and analysed using descriptive statistical techniques. Participant characteristics and lifestyle-related variables were summarized by calculating their frequencies and percentages.

The findings were presented using tables and graphical representations to facilitate interpretation. Owing to the small sample size, inferential statistical analyses were not performed.

Results

Participant Characteristics

Fifteen young adults within the age range of 18-30 years participated in this study. Females accounted for 60.0% (n=9) of the study population, whereas males represented 40.0% (n=6). Most participants belonged to the 21–25 years age group (66.7%, $n = 10$), while 3 (20.0%) were aged 26–30 years and 2 (13.3%) were in the 18–20 years age group. The demographic composition of the participants enrolled in the study is summarized in Table 1.

Table 1. Demographic Composition of Study Participants (N = 15)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	6	40.0
	Female	9	60.0
Age (years)	18–20	2	13.3
	21–25	10	66.7
	26–30	3	20.0

Blood Pressure Status

Blood pressure measurements demonstrated that 7 participants (46.7%) had optimal blood pressure, 6 participants (40.0%) had normal blood pressure, and 2 participants (13.3%) were classified as having high-normal blood pressure according to the Indian Guidelines on Hypertension-IV (2019). Importantly, no participant met the diagnostic criteria for Stage I or higher hypertension, indicating a low prevalence of hypertension within the study population (Table 2).

Table 2. Blood Pressure Classification of Participants

Blood Pressure Category	Frequency (n)	Percentage (%)
Optimal	7	46.7
Normal	6	40.0
High-normal	2	13.3
Hypertension	0	0

Lifestyle Characteristics

Lifestyle assessment revealed generally favourable health behaviours among the participants. Most respondents (**60.0%**) reported consuming fast food **rarely**, while weekly fast food intake was reported by **26.7%** of participants and **13.3%** indicated consuming fast food three to four times in a week. Regular physical activity was also common, with **40.0%** engaging in daily exercise and **26.7%** exercising three to five days per week. However, **13.3%** of participants reported no regular physical activity.

The majority of participants (**60.0%**) reported sleeping **5–7 hours per night**, while **26.7%** achieved the recommended **7–9 hours** of sleep. Only **13.3%** slept for less than five hours each night. Regarding psychological well-being, **60.0%** perceived their stress levels as low, whereas **40.0%** reported moderate stress; none reported high stress.

None of the participants reported smoking or alcohol consumption, suggesting that these traditional behavioural risk factors were absent in the study population. Family history of hypertension was reported by **13.3%** of participants, while **73.3%** had no known family history and **13.3%** were uncertain about their family history.

A notable finding was that **60.0%** of participants reported **daily mobile phone or laptop use before bedtime**, whereas **33.3%** reported occasional use and only **6.7%** reported never using electronic devices before sleep. This pattern suggests a high prevalence of screen exposure prior to bedtime among the participants.

Table 3. Lifestyle Characteristics of Participants

Variable	Category	n	%
Fast-food consumption	Rarely	9	60.0
	Once/week	4	26.7
	3–4 times/week	2	13.3
Physical exercise	everyday	6	40.0
	3–5 days each week	4	26.7
	1–2 days each week	3	20.0
	No regular activity	2	13.3
Sleep duration	<5 hours	2	13.3
	5–7 hours	9	60.0
	7–9 hours	4	26.7
Stress level	Low	9	60.0
	Moderate	6	40.0
Smoking	Yes	0	0
	No	15	100
Alcohol consumption	Yes	0	0
	No	15	100
Family history	Yes	2	13.3
	No	11	73.3
	Don't know	2	13.3
Screen time before sleep	Always	9	60.0
	Sometimes	5	33.3
	Never	1	6.7

Summary of Key Findings

The study demonstrated that hypertension was **not observed** among the participants, although **13.3%** exhibited **high-normal blood pressure**, indicating a potential risk for future hypertension. Most participants reported favourable lifestyle behaviours, including regular physical activity, infrequent fast-food consumption, and the absence of smoking and alcohol use. Nevertheless, prolonged screen exposure before bedtime and moderate psychological stress were common, suggesting areas where preventive health interventions may be beneficial.

Discussion

The present cross-sectional study investigated the association between lifestyle factors and blood pressure status among young adults aged 18–30 years in Meerut, Uttar Pradesh. Lifestyle-related behaviours, including dietary habits, physical activity, sleep duration, perceived stress, smoking, alcohol consumption, family history of hypertension, and screen time before sleep, were assessed alongside blood pressure measurements. The findings indicate that although none of the participants were diagnosed with hypertension, several modifiable lifestyle factors that could influence future cardiovascular health were identified.

A notable finding of the present study was that nearly half of the participants (46.7%) had optimal blood pressure, while 40.0% exhibited normal blood pressure. Only two participants (13.3%) were categorized as having high-normal blood pressure, and none met the diagnostic criteria for hypertension. These findings suggest that the prevalence of hypertension in this relatively young study population was low. However, individuals with high-normal blood pressure represent a group that may be susceptible to developing hypertension later in life if preventive measures are not adopted. High-normal blood pressure has been recognized as an intermediate stage associated with an increased risk of progression to clinical hypertension and cardiovascular disease.

The favourable blood pressure status recorded among the participants may reflect their positive lifestyle practices, particularly the regular physical activity reported by the majority of enrolled individuals. A majority of participants engaged in regular physical activity, consumed fast food infrequently, and reported no history of smoking or alcohol consumption. These behaviours are well-established protective factors against hypertension. Regular physical exercise improves endothelial function, enhances vascular compliance, and reduces sympathetic nervous system activity, thereby contributing to effective blood pressure regulation. Similarly, healthy dietary practices and avoidance of tobacco and alcohol reduce cardiovascular risk by minimizing vascular inflammation and metabolic disturbances.

The present findings are broadly consistent with previous studies emphasizing the importance of lifestyle modification in hypertension prevention. Meher et al. reported that sedentary behaviour, obesity, excessive dietary salt intake, unhealthy eating patterns, and inadequate physical activity are among the principal contributors to hypertension in young adults. Likewise, Oparil et al. highlighted regular physical activity as one of the most effective non-pharmacological strategies for maintaining healthy blood pressure and preventing cardiovascular disease. These

observations support the findings of the present study, where participants reporting healthier lifestyle practices generally demonstrated favourable blood pressure status.

Dietary habits observed in the present study also warrant discussion. Most participants reported consuming fast food only rarely, suggesting relatively healthy nutritional practices. Although dietary sodium intake was not quantitatively measured, lower frequency of fast-food consumption may indirectly reflect reduced intake of processed foods, which are often rich in sodium and saturated fats. Previous epidemiological studies have consistently demonstrated that diets emphasizing fruits, vegetables, whole grains, and reduced sodium intake contribute to lower blood pressure and improved cardiovascular outcomes. Therefore, encouraging healthy dietary practices during early adulthood remains an important public health strategy. Physical activity emerged as another favourable behavioural characteristic among the participants. Approximately two-thirds of the study population engaged in moderate to regular exercise several times each week. Regular exercise has consistently been associated with improved cardiac function, enhanced insulin sensitivity, reduced systemic inflammation, and better autonomic regulation of blood pressure. These physiological adaptations may explain the predominance of optimal and normal blood pressure observed among the participants.

Sleep duration and psychological stress are increasingly recognized as determinants of cardiovascular health. The majority of participants reported sleeping for 5–7 hours each night, whereas a smaller proportion achieved the recommended sleep duration of 7–9 hours.

Although the majority perceived their stress levels as low, 40% reported moderate stress. Chronic sleep deprivation and prolonged psychological stress have been shown to stimulate hormonal and neural regulatory mechanisms, resulting in sustained elevations in blood pressure over time. Although hypertension was not identified in the present study, these behavioural patterns may contribute to future cardiovascular risk if they persist.

One of the noteworthy observations in this study was the high prevalence of mobile phone and laptop use before bedtime, with 60% of participants reporting daily screen exposure prior to sleep. Excessive screen time has become increasingly common among young adults due to academic demands, occupational responsibilities, and social media engagement. Previous research suggests that prolonged screen exposure may adversely affect sleep quality, circadian rhythm, and stress levels, thereby indirectly influencing cardiovascular health. While the present study did not establish a direct relationship between screen time and blood

pressure because of its descriptive design and limited sample size, this finding highlights an emerging behavioural factor that deserves further investigation.

Interestingly, none of the participants reported smoking or alcohol consumption. Since both behaviours are well-established risk factors for hypertension and cardiovascular disease, their absence may have played a role in the favourable blood pressure status observed among participants. However, these findings should be interpreted carefully, as the limited study sample may not fully represent the behavioural patterns of the wider young adult population.

Despite providing useful preliminary information, the present study has several limitations. The sample size was limited to fifteen participants, reducing the generalizability of the findings. The use of convenience sampling may have resulted in selection bias. In addition, the cross-sectional nature of the study limits the ability to establish a cause-and-effect relationship between lifestyle factors and blood pressure.

Information used to evaluate lifestyle practices was obtained directly from the participants, which may have introduced inaccuracies due to difficulty in recalling previous behaviours and the tendency to present oneself in a socially favourable manner. The statistical analysis was restricted to descriptive methods, therefore, no inferential statistical associations could be established between individual lifestyle factors and blood pressure status.

Nevertheless, the study possesses several strengths. Blood pressure measurements were obtained directly using a validated digital blood pressure monitor rather than relying solely on self-reported health information. Furthermore, multiple lifestyle factors—including diet, physical activity, sleep, stress, smoking, alcohol consumption, family history, and screen time—were evaluated simultaneously, providing a comprehensive overview of behavioural influences on cardiovascular health among young adults.

Overall, the findings reinforce the importance of adopting healthy lifestyle practices during early adulthood. Although hypertension was not detected among the participants, the presence of high-normal blood pressure and several modifiable behavioural risk factors underscores the need for early preventive interventions. Health education, regular blood pressure screening, promotion of physical activity, healthy dietary practices, stress management, and reduction of excessive screen time may contribute substantially to preventing hypertension and improving long-term cardiovascular health among young adults.

Conclusion

The present cross-sectional study evaluated the influence of lifestyle factors on blood pressure status among young adults aged 18–30 years residing in Meerut, Uttar Pradesh. The findings demonstrated that none of the participants met the diagnostic criteria for hypertension, while 13.3% exhibited high-normal blood pressure, indicating a potential risk for future development of hypertension. Most participants reported favourable lifestyle practices, including regular physical activity, limited fast-food consumption, and complete absence of smoking and alcohol use. However, prolonged screen exposure before bedtime and moderate perceived stress were commonly observed, highlighting areas that warrant attention for future health promotion.

Although the prevalence of hypertension was low in the present study, the identification of modifiable behavioural risk factors emphasizes the importance of preventive interventions during early adulthood. Adopting a healthy lifestyle that includes balanced food choices, consistent participation in physical exercise, sufficient rest, appropriate stress-coping strategies and periodic assessment of blood pressure may help reduce the future burden of hypertension and associated cardiovascular diseases. The findings contribute to the growing body of evidence supporting lifestyle modification as a cornerstone of cardiovascular disease prevention among young adults.

Limitations

The present study provides useful insights into the relationship between lifestyle factors and blood pressure among young adults. However, the findings should be interpreted carefully because only 15 participants were included, and convenience sampling was used for participant selection. As the study employed a cross-sectional design, it was not possible to determine whether lifestyle factors had a direct effect on blood pressure status.

Furthermore, lifestyle information was based on self-reported responses and may therefore be subject to recall and reporting bias. Since only descriptive statistical analyses were performed, no statistically significant associations between individual lifestyle factors and blood pressure could be established.

Future Scope

Future studies should include a substantially larger and more diverse study population using probability-based sampling methods to improve representativeness. Longitudinal research is needed to evaluate changes in blood pressure over an extended period and to determine the association of lifestyle behaviours with

hypertension. Further investigations may also incorporate biochemical parameters, anthropometric measurements, and advanced statistical analyses to identify independent predictors of hypertension. Expanding similar studies to multiple educational institutions and community settings would provide broader insights into cardiovascular risk among young adults in India.

Ethical Statement

Participation in the study was completely voluntary. Before the collection of data began, every participant received a clear explanation of the research objectives and agreed verbally to take part in the study. Every effort was made to protect participants' privacy by maintaining the confidentiality and anonymity of the information provided. No personal identifying details were collected or revealed during any stage of the study.

References

1. Desai, N., Shah, S., Patel, K., & Sharma, R. (2021). *Risk factors and associated clinical characteristics among young Indian adults with hypertension: REAL YOUNG (Hypertension) Study*. Journal of the Association of Physicians of India, 69(3), Pg. **11–16**.
2. Meher, M., Pradhan, S., & Pradhan, S. R. (2023). Risk factors associated with hypertension in young adults: A systematic review. *Cureus*, 15(5), e38753.
3. Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. *Nature Reviews Nephrology*, 16(4), Pg. **223–237**. <https://doi.org/10.1038/s41581-019-0244-2>
4. Oparil, S., Acelajado, M. C., Bakris, G. L., Berlowitz, D. R., Cifková, R., Dominiczak, A. F., et al. (2018). Hypertension. *Nature Reviews Disease Primers*, 4, 18014. <https://doi.org/10.1038/nrdp.2018.14>
5. Shah, S. N., Munjal, Y. P., Kamath, S. A., Wander, G. S., Mehta, N., Mukherjee, S., et al. (2020). Indian Guidelines on Hypertension-IV (2019). *Journal of Human Hypertension*, 34(11), Pg. **745–758**.
6. World Health Organization. (2023). *Global report on hypertension: The race against a silent killer*. Geneva: World Health Organization.