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LIFESTYLE AND DEMOGRAPHIC DETERMINANTS OF ASYMPTOMATIC HYPERTENSION IN A CENTRAL INDIAN POPULATION

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ABSTRACT

Background: Hypertension is a major public health problem in India, with a substantial proportion of cases remaining asymptomatic and undiagnosed. Early identification of modifiable risk factors is essential for prevention. **Objectives:** To assess demographic and lifestyle determinants of asymptomatic hypertension and to estimate its prevalence in a Central Indian population. **Methods:** A retrospective cross-sectional study was conducted among 625 asymptomatic adults attending a tertiary care hospital in Central India (September 2020–December 2021). Data on demographic characteristics, body mass index (BMI), physical activity, sedentary behavior, dietary oil intake, and blood pressure were analyzed. Associations were assessed using appropriate statistical tests. **Results:** The prevalence of asymptomatic hypertension increased significantly with age ($p<0.05$). Higher BMI, physical inactivity, and sedentary behavior were significantly associated with hypertension ($p<0.05$). No significant association was observed with socioeconomic status or dietary oil consumption. **Conclusions:** Asymptomatic hypertension was strongly associated with advancing age, obesity, and adverse lifestyle factors. Population-based screening and lifestyle interventions are urgently needed.

KEYWORDS: Asymptomatic hypertension; Body mass index; Lifestyle factors; India; Screening.

INTRODUCTION

Hypertension is a leading modifiable risk factor for cardiovascular morbidity and mortality in India. Despite its high prevalence, awareness and control remain inadequate, resulting in a large burden of undiagnosed asymptomatic cases.[1,2] Opportunistic blood pressure screening is therefore recommended for early detection and prevention of long-term complications.[3-5] Identification of demographic and lifestyle determinants is essential for guiding targeted preventive strategies in the Indian context.

OBJECTIVES

1. To assess the association of asymptomatic hypertension with age, sex, body mass index, socioeconomic status, physical activity, sedentary behavior, dietary oil consumption, and family history of hypertension and diabetes mellitus.
2. To estimate the prevalence of asymptomatic hypertension and obesity in the Vidarbha region of Central India.

MATERIALS AND METHODS

Study Design and Setting

This retrospective cross-sectional study was conducted at Jawaharlal Nehru Medical College and Hospital, Sawangi (Meghe), Central India. Laboratory investigations were performed in the Department of Biochemistry.

Study Period

September 2020 to December 2021.

Study Population

Apparently healthy, asymptomatic individuals aged 17–70 years undergoing routine clinical and laboratory evaluation were included.

Sample Size

A sample size of 625 was calculated assuming a hypertension prevalence of 20%, with 95% confidence and 1% precision.

Definitions

- **Cases:** Asymptomatic individuals with hypertension
- **Controls:** Asymptomatic individuals with normal blood pressure

Exclusion Criteria

Participants with known cardiovascular or renal disease or on medications affecting blood pressure were excluded.

Statistical Analysis

Data were analyzed using Epi Info™ version 7. Results were expressed as proportions. Associations were evaluated using Pearson's correlation. A p-value <0.05 was considered statistically significant.

Ethical Considerations

The study was approved by the Institutional Ethics Committee and conducted in accordance with ICMR ethical guidelines. Patient confidentiality was maintained through anonymization.

RESULTS

The prevalence of asymptomatic hypertension increased significantly with advancing age, with the highest prevalence among individuals aged >60 years ($p<0.05$). Females showed a marginally higher prevalence than males. Socioeconomic status was not significantly associated with hypertension.

Table 1. Demographic characteristics of study participants and prevalence of asymptomatic hypertension.

Variable	Category	Total (n)	Asymptomatic hypertension n (%)	p value
Age (years)	17–30	110	8 (7.27)	
	31–45	208	19 (9.13)	
	46–60	213	16 (7.51)	
	>60	94	11 (11.70)	<0.05
Sex	Male	278	17 (6.12)	
	Female	347	22 (6.34)	<0.05
Socioeconomic status	Upper	187	20 (10.70)	
	Middle	246	25 (10.16)	
	Lower	192	18 (9.38)	NS
Values are expressed as number (%). NS = not significant.				

Table 2: Association of body mass index and lifestyle factors with asymptomatic hypertension (N = 625).

variable	Category	Total (n)	Asymptomatic hypertension n (%)	p value
Body mass index (kg/m²)	Normal (<25)	304	16 (5.26)	
	Overweight (25–29.9)	207	23 (11.11)	
	Obese (≥30)	114	26 (22.81)	<0.05
Physical activity	Adequate	296	21 (7.09)	
	Inadequate	329	29 (8.82)	<0.05
Sedentary behaviour (TV viewing/day)	<2 hours	215	18 (8.37)	
	≥2 hours	410	28 (6.83)	<0.05
Dietary oil consumption	≤ Recommended	235	16 (6.81)	
	> Recommended	390	27 (6.92)	NS
Values are expressed as number (%). BMI = body mass index. NS = not significant.				

Higher BMI demonstrated a significant dose–response relationship with asymptomatic hypertension. Physical inactivity and increased sedentary behavior were also significantly associated ($p<0.05$), whereas dietary oil consumption showed no significant association.

DISCUSSION

The present study demonstrates a significant age-related increase in asymptomatic hypertension, consistent with findings from NFHS-5 and other national studies.[6] Older age is associated with vascular stiffness and cumulative exposure to risk factors. The strong association between increasing BMI and hypertension highlights obesity as a key modifiable determinant, in line with Indian and global evidence.[6,8]

Physical inactivity and sedentary behaviour were significantly associated with hypertension, supporting WHO recommendations advocating regular physical activity for blood pressure control.[5,9] The absence of a significant association with dietary oil intake suggests that overall dietary patterns and energy balance may be more important contributors.

CONCLUSION

Asymptomatic hypertension in this Central Indian population was significantly associated with advancing age, higher BMI, physical inactivity, and sedentary behavior. Obesity emerged as a major modifiable risk factor. These findings emphasize the need for routine blood pressure screening and population-level lifestyle interventions to prevent hypertension-related complications.

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