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Original Article

Screening of Hypertension among Outpatients at a Tertiary Care Centre in Gonda (UP), INDIA

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ABSTRACT

Background: Hypertension is a leading modifiable risk factor for cardiovascular disease. Local hospital-level data on prevalence, awareness, treatment, and control are essential to guide screening and management programs.
Objectives: To estimate the prevalence of hypertension, document awareness, treatment, and control rates, and describe the major complications associated with hypertension among adult outpatients attending a tertiary care centre in Gonda, Uttar Pradesh.
Methods: Cross-sectional screening of adult outpatients (≥18 years) visiting outpatient departments between September 2024 and August 2025. A total of 44,367 consecutive consenting participants had blood pressure measured following standard protocol. Hypertension was defined as systolic BP ≥140 mmHg and/or diastolic BP ≥90 mmHg or self-reported antihypertensive use. Data on awareness, treatment, control, and complications were analyzed using descriptive statistics.
Results: Overall hypertension prevalence: 28.5% (95% CI 27.9–29.1). Among hypertensives, awareness was 52.3%, treatment 45.7%, and control 19.8%. Complications were observed in 22.5% of hypertensive patients. The most frequent complications were hypertensive heart disease (8.9%), stroke/TIA (5.1%), chronic kidney disease (4.3%), and retinopathy (3.2%).
Conclusions: Screening of 44,367 outpatients revealed a high prevalence of hypertension with low control rates and considerable target organ damage. Early detection and management are essential to reduce morbidity and mortality.

Keywords: *Hypertension; Prevalence; Awareness; Treatment; Control; Complications; Tertiary Care; India.*

INTRODUCTION

Despite improved medical management, cardiovascular disease (CVD) remains the leading cause of mortality for both men and women in the United States[1] and worldwide[2], with other vascular-related diseases such as stroke, diabetes, and chronic kidney disease ranking in the top 10[1]. Hypertension (HTN), an elevation in blood pressure (BP) meeting a cut-point, is a major modifiable risk factor for these conditions[3],[4].

MATERIALS AND METHODS

This cross-sectional, hospital-based study was conducted at the tertiary care hospital Gonda, Uttar Pradesh over one year (September 2024 – August 2025)[1],[2]. All adult outpatients aged ≥18 years were eligible, excluding pregnant women, critically ill patients, and those unable to provide informed consent[3]. BP measurements followed standard protocol using validated automated sphygmomanometers[4],[5]. Hypertension was defined as SBP ≥140 mmHg and/or DBP ≥90 mmHg or current antihypertensive medication[5]. Awareness, treatment, and control were defined according to standard definitions[6],[7]. Complications including hypertensive heart disease, stroke/TIA, CKD, and retinopathy were assessed[8],[9]. Statistical analysis was performed using SPSS v25; logistic regression identified predictors with $p<0.05$ considered significant[9],[10].

Study Population:

All adult outpatients aged ≥18 years who visited the OPD during the study period were considered. Exclusion criteria included pregnant women, critically ill patients requiring emergency care, and those unable to provide informed consent.

Sample Size and Sampling:
A total of 44,367 consecutive consenting adults were screened. Consecutive sampling ensured that all eligible patients visiting the OPD were included, minimizing selection bias.

Blood Pressure Measurement Protocol:
- BP was measured using a validated automated sphygmomanometer.
- Patients rested seated for 5 minutes prior to measurement.
- Two readings were taken at 1–2 minute intervals; the average of the two readings was recorded.
- Hypertension was defined as SBP ≥140 mmHg and/or DBP ≥90 mmHg, or current use of antihypertensive medication.

Definitions:
- Awareness: self-report of prior diagnosis by a health professional.
- Treatment: current use of antihypertensive medication.
- Control: treated patients with BP <140/90 mmHg.
- Complications: included hypertensive heart disease, stroke/TIA, chronic kidney disease, hypertensive retinopathy, and peripheral artery disease.

Data Collection and Ethical Considerations:
- Demographics: age, sex, residence, BMI, comorbidities, smoking, alcohol.
- Informed consent obtained; study approved by Institutional Ethics Committee.

Statistical Analysis:
- Data analyzed using SPSS v25. Continuous variables as mean ± SD; categorical as n (%).
- Prevalence, awareness, treatment, control, and complications calculated with 95% CI.
- Logistic regression to identify predictors. $p<0.05$ significant.

RESULTS
Demographics and Baseline Characteristics:
Total participants: 44,367; mean age 46.8 ± 12.3 years. Males: 54.8%, Females: 45.2%. Mean BMI: 25.1 ± 3.8 kg/m². Diabetes mellitus: 12%, Smoking/tobacco use: 20.5%.

Prevalence of Hypertension:
Overall prevalence: 28.5% (12,646 patients; 95% CI: 27.9–29.1). Newly diagnosed cases: 47.7% of hypertensives. Prevalence increased with age, highest in ≥60 years.

Awareness, Treatment, and Control:
Awareness: 52.3% of hypertensive patients; Treatment: 45.7%; Control: 19.8%.

Complications of Hypertension:
Hypertensive heart disease: 8.9%; Stroke/TIA: 5.1%; Chronic kidney disease: 4.3%; Retinopathy: 3.2%; Peripheral artery disease: 1.0%; At least one complication: 22.5%.

Predictors of Hypertension:
Age: aOR 1.48 per 10-year increase (95% CI 1.39–1.57); BMI ≥25 kg/m²: aOR 1.67 (95% CI 1.53–1.81); Diabetes: aOR 1.42 (95% CI 1.31–1.55).

Tables and Charts

Table 1. Baseline Characteristics of Participants (n=44,367)

Variable	Mean ± SD / n (%)
Age (years)	46.8 ± 12.3
Male	24,310 (54.8%)
Female	20,057 (45.2%)
BMI (kg/m²)	25.1 ± 3.8
Diabetes mellitus	5,325 (12.0%)
Smoking/tobacco use	9,102 (20.5%)

Table 2. Hypertension Prevalence, Awareness, Treatment, and Control

Parameter	n	% (95% CI)
Hypertensive patients	12,646	28.5 (27.9–29.1)

Awareness among hypertensives	6,615	52.3
On treatment	5,780	45.7
Controlled BP (<140/90 mmHg)	2,504	19.8

Table 3. Hypertension-Related Complications among Hypertensive Patients (n=12,646)

Complication	n	%
Hypertensive heart disease	1,126	8.9
Stroke / TIA	644	5.1
Chronic kidney disease	544	4.3
Hypertensive retinopathy	404	3.2
Peripheral artery disease	124	1.0

DISCUSSION

The prevalence aligns with NFHS-5 and ICMR-INDIAB[1,2]. Awareness and control remain suboptimal[3,4]. Approximately 22.5% had target organ damage[5–7]. Persistent high BP causes vascular remodeling, endothelial dysfunction, and organ injury[8]. Early detection, lifestyle modification, and adherence to therapy are essential[9,10].

Principal Findings:
High prevalence (28.5%) of hypertension among outpatients; nearly half unaware, only one-fifth controlled. Significant gaps in early detection and management.

Comparison with Literature:
Consistent with NFHS-5 and ICMR-INDIAB surveys; awareness and control remain suboptimal in India.

Complications:
22.5% had target organ damage; hypertensive heart disease most common, followed by stroke, CKD, and retinopathy. Chronic uncontrolled hypertension leads to vascular remodeling, endothelial dysfunction, and organ damage.

Strengths:
Large sample size, standardized BP measurement, consecutive patient inclusion.

Limitations:
Single-center study, cross-sectional design, incomplete investigations for some complications.

Implications for Practice:
Routine OPD screening, lifestyle modification counseling, adherence support, and referral to specialists recommended.

CONCLUSION

High burden of hypertension, low awareness and control, and frequent complications. Systematic screening and early intervention are key.

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