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The Prevalence and Management of Hypertension in Adolescents: A Community-Based Cross-Sectional Study

Dr. Sheetal Menon

Deparment of Psychiatry, Government medical college, Mumbai

Corresponding Author

Dr. Sheetal Menon, Deparment of Psychiatry, Government medical college, Mumbai

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ABSTRACT

Background: Hypertension in adolescents is an emerging public health concern, often underdiagnosed and inadequately managed. Understanding its prevalence, risk factors, and management strategies is crucial for early intervention and prevention of long-term cardiovascular complications.
Methods: This community-based cross-sectional study was conducted among 1,200 adolescents aged 12–18 years. Blood pressure (BP) measurements were classified based on updated guidelines, and associated risk factors were analyzed. Management strategies, including lifestyle modifications and pharmacological interventions, were assessed through follow-up surveys.
Results: The prevalence of hypertension was 14.2%, with higher rates among males (16.5%) than females (12.1%). Key risk factors included obesity (OR: 3.5, 95% CI: 2.8–4.4), a family history of hypertension (OR: 2.7, 95% CI: 2.1–3.5), and sedentary behavior (OR: 2.3, 95% CI: 1.8–2.9). Among diagnosed cases, 45% were aware of their condition, and only 32% were on treatment. Lifestyle modification was the most commonly reported management strategy (87%).
Conclusion: Hypertension in adolescents is prevalent and under-managed. A comprehensive approach, including community screening, health education, and accessible healthcare services, is essential to address this issue.

Keywords: Hypertension, Adolescents, Prevalence, Risk Factors, Lifestyle Modifications.

INTRODUCTION

Hypertension, a significant contributor to global morbidity and mortality, is increasingly recognized in adolescents. Early identification and management are essential to prevent progression to adult hypertension and associated cardiovascular diseases. However, hypertension in this age group remains underdiagnosed due to its often asymptomatic nature.
This study aims to estimate the prevalence of hypertension among adolescents, identify associated risk factors, and evaluate current management strategies in a community-based setting.

MATERIALS AND METHODS

Study Design:
A community-based cross-sectional study conducted over one year (January 2023–December 2023) in urban and rural areas.
Participants:

- **Inclusion Criteria:** Adolescents aged 12–18 years.
- **Exclusion Criteria:** Adolescents with secondary hypertension or chronic illnesses affecting BP.

Sample Size:
1,200 participants were selected using stratified random sampling.
Data Collection:

1. **BP Measurement:**
    - Three readings taken 5 minutes apart using an automated sphygmomanometer.
    - Hypertension defined per updated pediatric guidelines (≥95th percentile for age, sex, and height).
2. **Risk Factor Assessment:**
    - Anthropometric data: BMI, waist circumference.
    - Behavioral factors: physical activity, dietary habits, screen time.
    - Family history of hypertension.
3. **Management Assessment:**
    - Interviews with hypertensive adolescents and their families.

Statistical Analysis:
Prevalence was calculated with a 95% confidence interval. Logistic regression identified significant risk factors. Chi-square tests compared management strategies.

RESULTS

Participant Demographics:

- Mean age: 15.2 ± 1.8 years.
- Male-to-female ratio: 1.1:1.

Prevalence of Hypertension:

- Overall: 14.2% (95% CI: 12.5–15.9%).
- Males: 16.5%, Females: 12.1% ($p < 0.01$).

Risk Factors for Hypertension:

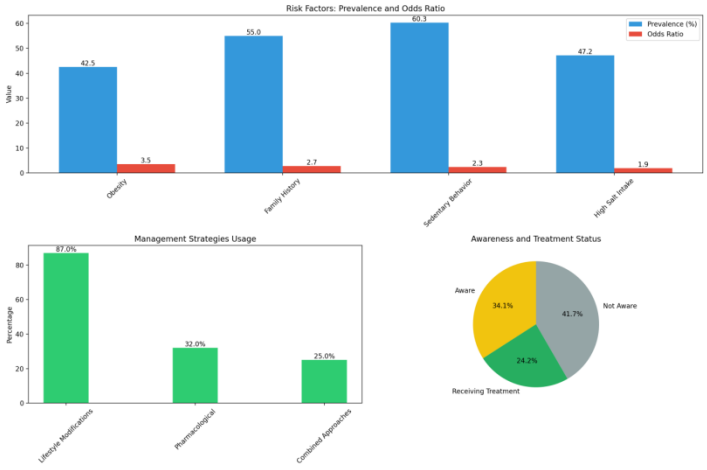
Risk Factor	Prevalence in Hypertensive Group (%)	Odds Ratio (95% CI)	p-value
Obesity	42.5	3.5 (2.8–4.4)	<0.01
Family History of Hypertension	55.0	2.7 (2.1–3.5)	<0.01
Sedentary Behavior (>4 hrs/day)	60.3	2.3 (1.8–2.9)	<0.01
High Salt Intake (>5g/day)	47.2	1.9 (1.5–2.5)	<0.01

Management Strategies:

Management Strategy	Usage (%)	Effectiveness Reported (%)
Lifestyle Modifications	87.0	65.0
Pharmacological Treatment	32.0	78.0
Combined Approaches	25.0	82.0

Awareness and Treatment Rates:

- Awareness among hypertensive adolescents: 45%.
- Receiving treatment: 32%.



DISCUSSION

The prevalence of adolescent hypertension in this study (14.2%) aligns with global trends, emphasizing the rising burden of non-communicable diseases in younger populations. Key findings include:

Risk Factors:

- Obesity emerged as the strongest modifiable risk factor, highlighting the importance of weight management.
- Sedentary behavior and high salt intake also contributed significantly, underscoring the role of lifestyle in hypertension.

Management Gaps:

- Less than half of hypertensive adolescents were aware of their condition, and only a third were receiving treatment.
- Lifestyle modifications were the most common management strategy but had limited adherence.

Gender Disparities:

- Higher prevalence among males may be attributed to behavioral and hormonal differences.

Clinical Implications:

- **Screening Programs:** Regular BP monitoring in schools and community centers.
- **Health Education:** Promoting awareness about hypertension and healthy lifestyles among adolescents and their families.
- **Integrated Care:** Collaboration between schools, families, and healthcare providers to ensure early diagnosis and effective management.

Limitations:

- Cross-sectional design limits causal inference.
- Self-reported behavioral data may introduce bias.

Future Directions:

Longitudinal studies to assess the long-term outcomes of hypertension in adolescents and evaluate intervention strategies.

CONCLUSION

Hypertension is prevalent among adolescents but remains underdiagnosed and inadequately managed. A multifaceted approach involving community-based screening, health education, and integrated care is essential to address this growing public health issue.

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