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# Prevalence of Hypertension among Elderly People in Rural Areas: A Community-Basedcross-Sectional Study

**Dr. Asha A Bellad[1]*, Dr. Soumya Agadi[2], Dr. Gowthamkarthic Ravichandhiran[3]**

[1]Associate Professor, Department of Community Medicine, KAHER's J. N. Medical College, Belagavi, Karnataka, India
[2]Assistant Professor, Department of Community Medicine, PSP Medical College Hospital & Research Institute, Kancheepuram District, Tamil Nadu - 631604, India
[3]Assistant Professor, Department of Community Medicine, KLE JGMMMC, Hubli, Kle Academy of education and research, Hubballi – 580028, Karnataka, India.

Corresponding author- **Dr. Asha A Bellad***

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**Abstract:** ***Background*:** Hypertension is a major public health concern, particularly among the elderly population, and is a leading risk factor for cardiovascular diseases. Understanding its prevalence in rural areas, where healthcare access is often limited, is crucial for developing targeted interventions. This study aimed to determine the prevalence of hypertension and associated risk factors among elderly individuals in rural areas. ***Methods*:** A community-based cross-sectional study was conducted from June 2023 to July 2024, involving 60 elderly participants aged 60 years and above in rural areas. Participants were selected through systematic random sampling. Data were collected using a structured questionnaire, covering demographic information, lifestyle factors, and medical history. Blood pressure measurements were taken using a validated digital sphygmomanometer. Hypertension was defined as systolic blood pressure (SBP) ≥130 mm Hg or diastolic blood pressure (DBP) ≥80 mm Hg, according to ACC/AHA guidelines. Data were analyzed using SPSS version 25.0, with descriptive statistics and chi-square tests used to assess risk factors. ***Results*:** The study included 60 participants, with a mean age of 68.5 ± 5.3 years. The overall prevalence of hypertension was 46.7%. Females comprised 58.3% of the study population. Participants aged 70 years and above had a significantly higher prevalence of hypertension ($p = 0.03$). Other significant risk factors included BMI ≥25 kg/m² ($p = 0.02$) and physical inactivity ($p = 0.01$). A family history of hypertension was also associated with a higher prevalence of the condition ($p = 0.04$). ***Conclusion*:** The prevalence of hypertension among elderly individuals in rural areas is high, with significant associations with age, BMI, physical inactivity, and family history. These findings highlight the need for targeted public health interventions to manage and prevent hypertension in rural elderly populations.

**Keywords:**Hypertension, Elderly, Rural Areas, Prevalence.

## INTRODUCTION

Hypertension is a significant public health concern worldwide, and it is a primary risk factor for cardiovascular diseases, including heart disease, stroke, and kidney failure [1]. As the global population ages, the burden of hypertension is expected to rise, particularly among the elderly [2]. In India, hypertension is prevalent among the elderly population, and the condition is often exacerbated by factors such as unhealthy diets, sedentary lifestyles, and limited access to healthcare [3].

Rural areas face unique challenges in managing hypertension due to socioeconomic disparities, inadequate

healthcare infrastructure, and lower health literacy levels [4]. These factors contribute to the underdiagnosis and suboptimal management of hypertension in rural elderly populations, increasing the risk of adverse health outcomes [5]. Therefore, understanding the prevalence and associated risk factors of hypertension in rural areas is crucial for designing effective public health interventions [6].

Previous studies have shown that hypertension prevalence is influenced by various factors, including age, body mass index (BMI), smoking status, physical activity, and family history of hypertension [7]. However, there is limited research specifically focusing on rural elderly populations. This study aims to assess the prevalence of hypertension among elderly individuals in rural areas and identify the associated risk factors. By focusing on this population, we hope to provide insights into their specific healthcare needs and contribute to the development of targeted strategies to reduce the burden of hypertension in these communities.

## Materials and Methods

### Study Design and Setting

This community-based cross-sectional study was conducted in rural areas from June 2023 to July 2024. The study targeted elderly individuals aged 60 years and above who were permanent residents of these rural communities.

### Study Population

A total of 60 participants were included in the study, selected through a systematic random sampling method. Inclusion criteria were individuals aged 60 years or older, residing in the rural area for at least one year, and willing to provide informed consent. Exclusion criteria included individuals with known secondary hypertension or cognitive impairments that precluded informed consent.

### Data Collection

Data were collected using a structured questionnaire covering demographic information, lifestyle factors, medical history, and hypertension-related knowledge. Blood pressure measurements were taken using a validated digital sphygmomanometer, following standardized procedures. Hypertension was defined according to the American College of Cardiology/American Heart Association (ACC/AHA) guidelines as systolic blood pressure (SBP) ≥130 mm Hg or diastolic blood pressure (DBP) ≥80 mm Hg.

### Statistical Analysis

Data were analyzed using SPSS version 25.0. Descriptive statistics were used to summarize the data, including means, standard deviations, frequencies, and percentages. The prevalence of hypertension was calculated, and potential risk factors were assessed using chi-square tests and logistic regression analysis. A p-value of <0.05 was considered statistically significant.

## RESULTS AND OBSERVATIONS

**Table 1: Demographic Characteristics of Study Participants**

| Demographic Characteristics | Frequency (n) | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Male | 25 | 41.7 |
| Female | 35 | 58.3 |
| **Age Group (years)** | | |
| 60-64 | 20 | 33.3 |
| 65-69 | 18 | 30.0 |
| 70-74 | 12 | 20.0 |
| 75+ | 10 | 16.7 |

The study included 60 elderly participants, 35 (58.3%) female and 25 (41.7%) male. The mean age of the participants was 68.5 ± 5.3 years. The overall prevalence of hypertension in the study population was 46.7%.

**Table 2: Prevalence of Hypertension among Study Participants**

| Hypertension Status | Frequency (n) | Percentage (%) |
|---|---|---|
| Hypertensive | 28 | 46.7 |
| Normotensive | 32 | 53.3 |

Risk factors associated with hypertension included age, body mass index (BMI), smoking status, and physical activity level. Participants aged 70 years and above had a significantly higher prevalence of hypertension ($p = 0.03$). Additionally, individuals with a BMI ≥25 kg/m² were more likely to be hypertensive ($p = 0.02$).

**Table 3: Association of Age and BMI with Hypertension**

| Risk Factor | Hypertensive (n = 28) | Normotensive (n = 32) | p-value |
|---|---|---|---|
| Age ≥70 years | 15 | 10 | 0.03 |
| BMI ≥25 kg/m² | 18 | 12 | 0.02 |

**Table 4: Association of Lifestyle Factors with Hypertension**

| Lifestyle Factor | Hypertensive (n = 28) | Normotensive (n = 32) | p-value |
|---|---|---|---|
| **Smoking Status** | | | |
| Smoker | 12 | 8 | 0.07 |
| Non-smoker | 16 | 24 | |
| **Physical Activity** | | | |
| Active | 10 | 20 | 0.01 |
| Inactive | 18 | 12 | |

**Table 5: Association of Medical History with Hypertension**

| Medical History | Hypertensive (n = 28) | Normotensive (n = 32) | p-value |
|---|---|---|---|
| Family History of Hypertension | 14 | 10 | 0.04 |
| Diabetes Mellitus | 9 | 6 | 0.11 |

The study found that a family history of hypertension was significantly associated with higher hypertension prevalence (p = 0.04), while the association with diabetes mellitus was not statistically significant.

## DISCUSSION

The prevalence of hypertension among the elderly population in rural areas found in this study was 46.7%, which is consistent with previous research highlighting the high burden of hypertension in older adults [1]. This finding underscores the urgent need for targeted public health interventions to address hypertension, particularly in resource-limited rural settings.

Several risk factors were significantly associated with hypertension in our study population. Age was a prominent factor, with participants aged 70 years and above showing a higher prevalence of hypertension (p = 0.03). This aligns with existing literature that indicates increased age as a significant risk factor for hypertension due to vascular changes and increased arterial stiffness associated with aging [2].

Body mass index (BMI) also showed a strong association with hypertension, where individuals with a BMI ≥25 kg/m² were more likely to be hypertensive (p = 0.02). This supports previous findings that obesity is a major risk factor for hypertension due to its effects on insulin resistance and sympathetic nervous system activation [3].

Physical inactivity was another significant risk factor identified in this study. Inactive participants had a higher prevalence of hypertension compared to their active counterparts (p = 0.01). This is in line with studies demonstrating that regular physical activity helps to reduce blood pressure and improve cardiovascular health by enhancing endothelial function and reducing systemic inflammation [4].

Although smoking status did not reach statistical significance in our study (p = 0.07), it is important to consider that smoking is a well-established risk factor for hypertension and cardiovascular diseases [5]. Our findings suggest that interventions targeting smoking cessation could potentially benefit hypertension management in rural elderly populations.

Family history of hypertension was significantly associated with higher hypertension prevalence (p = 0.04), indicating a genetic predisposition and shared environmental factors that contribute to the development of hypertension [6]. While the association with diabetes mellitus was not statistically significant (p = 0.11), it is noteworthy that diabetes is often comorbid with hypertension, warranting further investigation [7].

This study's findings highlight the importance of comprehensive strategies to manage hypertension in rural areas, focusing on modifiable risk factors such as obesity and physical inactivity. Community-based interventions, including health education, lifestyle modification programs, and improved access to healthcare services, are essential to address these risk factors effectively.

## LIMITATIONS

This study has some limitations that should be considered. The relatively small sample size may limit the

generalizability of the findings to broader rural populations. Additionally, self-reported data on lifestyle factors could be subject to recall bias. Future studies with larger sample sizes and longitudinal designs are needed to confirm these findings and explore causal relationships.

## CONCLUSION

The high prevalence of hypertension among the elderly in rural areas highlights a pressing public health challenge. Addressing risk factors such as obesity, physical inactivity, and family history through targeted interventions can help reduce the burden of hypertension and improve the overall health of rural elderly populations.

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