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Original Research Article

Prevalence of hypertension and chronic disease awareness in South Kerala: a community-based study

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ABSTRACT

Background: Hypertension is a leading risk factor for cardiovascular mortality. Adequate awareness of chronic diseases is essential for effective prevention. The objective of the study was to estimate hypertension prevalence and assess awareness regarding chronic diseases (hypertension, diabetes, coronary artery disease, COPD) among adults in a Family Adoption Programme (FAP) area in South Kerala.
Methods: A community-based cross-sectional study included 300 adults (≥18 years) in Thiruvalla Municipality. Data were collected via an interviewer-administered questionnaire assessing sociodemographic and disease knowledge. Blood pressure was measured using standard procedures.
Results: The prevalence of hypertension was 32.0% (95% CI: 26.7%-37.3%). Prevalence increased significantly with age ($p < 0.001$) and was higher among widowed individuals ($p=0.011$) and Christians ($p=0.004$). The mean overall knowledge score was 10.44±4.57 (out of 20). Awareness was lowest for COPD. Overall knowledge varied significantly by socio-economic status ($p=0.019$), but not by hypertension status. Normotensive participants exhibited significantly better diabetes knowledge ($p=0.01$).
Conclusions: A high hypertension prevalence and moderate disease awareness highlight the need for targeted community-based screening and health education, particularly for less-recognized conditions like COPD.

Keywords: Hypertension, Chronic diseases, Awareness, Community-based study, Family adoption programme

INTRODUCTION

Non-communicable diseases (NCDs) have emerged as the dominant public health challenge of the 21st century. The World Health Organization estimates that NCDs kill 43 million people each year, with cardiovascular diseases (CVDs) claiming 19 million lives annually.[1] Rapid epidemiological transitions in low- and middle-income countries like India have resulted in a "double burden" of disease, where infectious challenges persist alongside rising chronic conditions.[2,3] Hypertension, often termed the "silent killer," is a major modifiable risk factor for CVDs and renal failure. Defined by a persistent systolic blood pressure of ≥140 mm Hg or diastolic of ≥90 mm Hg, its asymptomatic nature often causes delayed diagnosis. An estimated 1.28 billion adults worldwide

have hypertension, yet nearly half remain unaware of their condition.[4] In India, studies show that only 27% of diagnosed individuals are aware of it.[5] The state of Kerala holds a unique position. Despite boasting health indicators comparable to developed nations, Kerala reports the highest morbidity rates in the country for NCDs, driven by rapid demographic aging, high saturated fat and salt consumption, and sedentary lifestyles. Studies suggest nearly one in three adults in Kerala suffers from hypertension.[6] Assessing awareness is as crucial as measuring prevalence. Misconceptions contribute heavily to poor medication adherence and treatment failure. Thus, this study aims to estimate the prevalence of hypertension and assess the level of awareness regarding selected chronic diseases (hypertension, diabetes mellitus, coronary artery disease, and COPD) among adults in the Family Adoption Programme (FAP) area of a tertiary care centre in South Kerala.

METHODS

Study design and setting

A community-based cross-sectional analytical study was conducted in Wards 14, 16, and 17 of Thiruvalla Municipality, which constitutes the FAP area of Pushpagiri Institute of Medical Sciences and Research Centre. The study was conducted between July 15, 2025, and September 30, 2025.

Study population and sampling

The study population comprised adults aged 18 years and above. Based on an estimated hypertension prevalence of 49% and an absolute precision of 6%, the calculated sample size was 267; however, 300 participants were ultimately included to account for non-response and improve precision.[7] Participants were recruited using consecutive convenience sampling during house-to-house visits. Severely ill individuals and pregnant women were excluded from the study. Written informed consent was obtained from all participants prior to their inclusion.

Data collection

Data were collected using a pre-tested, semi-structured, interviewer-administered questionnaire. The tool consisted of three sections:

Sociodemographic profile: Information regarding age, gender, marital status, religion, family type, education, and occupation was collected. Socio-economic status (SES) was assessed using the Modified Kuppuswamy scale.

Blood pressure measurement: Blood pressure was measured using a calibrated digital sphygmomanometer following standard operating procedures. Participants were seated comfortably with their backs supported and arms resting at heart level after a minimum rest period of five minutes. Two readings were recorded at five-minute intervals, and the average was utilized for analysis. Hypertension was defined as having a systolic blood pressure ≥140 mm Hg, a diastolic blood pressure ≥90 mm Hg, or a self-reported history of hypertension with the current use of antihypertensive medication.

Knowledge assessment: Awareness regarding four selected chronic diseases (hypertension, diabetes mellitus, coronary artery disease, and chronic obstructive pulmonary disease) was evaluated using a 20-item questionnaire, with five questions dedicated to each domain. Each correct response was awarded a score of 1, and incorrect responses scored 0, yielding a maximum total knowledge score of 20.

Statistical analysis: Data were initially entered into Microsoft Excel and subsequently analyzed using Jamovi software (version 2.3.28.0). Descriptive statistics were employed, with categorical variables expressed as frequencies and percentages, and continuous variables summarized as means with standard deviations. Inferential statistics included the Chi-square test and Fisher's exact test, which were used to assess the association between hypertension status and various sociodemographic variables. To compare mean knowledge scores across different groups (e.g., by hypertension status or sociodemographic class), the independent t-test and one-way Analysis of Variance (ANOVA) were utilized. For all tests, a p value of <0.05 was considered statistically significant.

RESULTS

Sociodemographic profile

The study included 300 adults with a mean age of 57.43 years (SD=16.11). Females constituted 61.0% of the sample. The majority of participants were married (75.3%), belonged to nuclear families (70.7%), and fell into the lower middle (37.3%) or upper lower (33.3%) socio-economic CLASSES (Table 1).

Prevalence of hypertension

The prevalence of hypertension was 32.0% (n=96). Hypertension showed a progressive, significant increase with advancing age ($p<0.001$), peaking at 44.4% in participants aged >60 years. A significantly higher prevalence was observed among widowed individuals (46.0%, p=0.011) and Christians (39.1%, p=0.004). No significant association was found regarding gender (p=0.800), family type (p=0.131), or socio-economic status (p=0.684) (Table 2).

Knowledge regarding chronic diseases

The mean overall knowledge score was 10.44±4.57 out of 20. Domain-specific knowledge was highest for hypertension (2.85±1.46) and coronary artery disease

(2.81±1.65), and lowest for COPD (2.10±1.35). Hypertension status did not significantly influence overall knowledge (p=0.152) or hypertension-specific knowledge (p=0.617).

However, normotensive participants had significantly higher mean diabetes knowledge score (2.81±1.25) compared to hypertensive individuals (2.40±1.37) (p=0.01) (Table 3). Overall knowledge scores did not differ significantly based on age, gender, religion, marital status, or family type.

However, there was statistically significant variation in knowledge scores across socio-economic groups (ANOVA, F=3.387, p=0.019), with post-hoc analysis revealing significant difference specifically between the upper middle and upper lower classes.

Table 1: Baseline sociodemographic characteristics of the study population (n=300).

Variable	Category	Frequency (N)	Percentage (%)
Age group (years)	≤40	51	17.0
	41-50	35	11.7
	51-60	70	23.3
	61-70	81	27.0
	>70	63	21.0
Gender	Male	117	39.0
	Female	183	61.0
Marital status	Married	226	75.3
	Single*	24	8.0
	Widowed	50	16.7
Religion	Hindu	139	46.3
	Christian	161	53.7
Family type	Nuclear	212	70.7
	Three generation	59	19.7
	Joint	29	9.7
Socioeconomic status	Upper middle	66	22.0
	Lower middle	112	37.3
	Upper lower	100	33.3
	Lower	22	7.3

*Note: 'Single' includes unmarried, divorced, and separated individuals.

Table 2: Association between sociodemographic variables and hypertension status.

Variable	Category	Hypertension present N (%)	Hypertension absent N (%)	P value
Age group (years)	≤40	2 (3.9)	49 (96.1)	<0.001*
	41-50	10 (28.6)	25 (71.4)	
	51-60	20 (28.6)	50 (71.4)	
	61-70	36 (44.4)	45 (55.6)	
	> 70	28 (44.4)	35 (55.6)	
Gender	Male	36 (30.8)	81 (69.2)	0.800
	Female	60 (32.8)	123 (67.2)	
Marital status	Married	70 (31.0)	156 (69.0)	0.011*
	Single	3 (12.5)	21 (87.5)	
	Widowed	23 (46.0)	27 (54.0)	
Religion	Hindu	33 (23.7)	106 (76.3)	0.004*
	Christian	63 (39.1)	98 (60.9)	
Family type	Nuclear	75 (35.4)	137 (64.6)	0.131
	Three gen.	13 (22.0)	46 (78.0)	
	Joint	8 (27.6)	21 (72.4)	
Socioeconomic	Upper middle	19 (28.8)	47 (71.2)	0.684
	Lower middle	38 (33.9)	74 (66.1)	
	Upper lower	30 (30.0)	70 (70.0)	
	Lower	9 (40.9)	13 (59.1)	

*Statistically significant at p<0.05.

Table 3: Comparison of knowledge scores regarding chronic diseases based on hypertension status.

Knowledge domain (max. score)	Overall mean (SD)	Hypertensive mean (SD)	Normotensive mean (SD)	P value
Overall score (20)	10.44 (4.57)	9.89 (4.80)	10.70 (4.45)	0.152
Hypertension (5)	2.85 (1.46)	2.79 (1.53)	2.88 (1.43)	0.617
Diabetes (5)	2.68 (1.30)	2.40 (1.37)	2.81 (1.25)	0.01*
Coronary artery disease (5)	2.81 (1.65)	2.61(1.71)	2.9(1.63)	0.884
COPD (5)	2.10 (1.35)	2.08(1.37)	2.11(1.35)	0.152

*Statistically significant at $p<0.05$.

DISCUSSION

The present community-based study was undertaken to estimate the prevalence of hypertension, assess awareness regarding selected chronic diseases, and examine the association of sociodemographic factors with both hypertension and knowledge levels among adults in the FAP area of a tertiary care centre in South Kerala. The overall prevalence of hypertension in the study population was 32.0%, indicating that nearly one-third of adults were affected. This reflects a substantial burden at the community level and is comparable with national estimates that report adult hypertension prevalence in India ranging from 25%-30%. The high prevalence observed in this study aligns with Kerala's advanced epidemiological transition and the increased regional burden of non-communicable diseases.[3-8]

Consistent with existing literature, this study demonstrated a statistically significant increasing trend in hypertension prevalence with advancing age, peaking at 44.4% among participants aged 61 years and above. Age is a well-established major non-modifiable risk factor; this progressive increase is largely attributable to age-related structural and functional changes in the arterial system, increased arterial stiffness, and cumulative lifelong exposure to behavioural and metabolic risk factors.[9,10]

Interestingly, no statistically significant association was observed between gender and hypertension. This is contradictory to several recent Indian studies reporting gender differences in hypertension prevalence, particularly among older age groups where lifestyle and biological risk factors tend to converge.[11,12] A significant association was, however, observed with marital status, with the highest prevalence noted among widowed participants (46.0%). This finding is particularly noteworthy, as widowhood is frequently associated with psychosocial stress, social isolation, and subsequent negative changes in lifestyle and health-seeking behaviour, all of which can significantly elevate blood pressure.[13] Furthermore, a significant association was observed between religion and hypertension status, with a higher prevalence among Christians. While this may reflect underlying differences in cultural practices, dietary patterns, or lifestyle behaviours across religious groups, the cross-sectional nature of the study precludes any causal interpretation. No significant association was found regarding the type of the family or socio-economic status, which may be due to the complex, mitigating influences of education, uniform access to local healthcare, and baseline health awareness across the region. The overall knowledge regarding selected chronic diseases was moderate, with a mean score of 10.44 out of 20. Domain-specific analysis revealed higher awareness for hypertension, diabetes mellitus, and coronary artery disease, but comparatively lower knowledge regarding chronic obstructive pulmonary disease (COPD). This distinct pattern of awareness mirrors current public health priorities in India, which heavily emphasize cardiovascular and metabolic disease screening and education. The lower awareness of COPD highlights a critical gap in community-level health education regarding chronic respiratory diseases, which often remain under-recognized despite their significant morbidity burden. When comparing knowledge scores by hypertension status, the presence of hypertension did not translate into better overall or hypertension-specific knowledge. This suggests that a clinical diagnosis alone does not automatically improve disease-specific health literacy. Conversely, normotensive individuals demonstrated significantly higher knowledge scores in the diabetes domain, which may reflect their differential exposure to preventive health information or more proactive engagement with general health education activities.

Knowledge levels were distributed relatively uniformly across age, gender, religion, marital status, and family type. However, a statistically significant association was observed between socio-economic status and overall knowledge scores. Notably, this variation did not follow a strict linear gradient; post-hoc analysis revealed a specific significant difference between the upper middle and upper lower socio-economic groups. This non-linear relationship suggests that socio-economic status influences health knowledge in a complex manner, likely mediated by intersecting factors such as access to health services, varied exposure to digital or printed health information, and the reach of community-level interventions.[14,15] These findings carry important public health implications. The high prevalence of hypertension, especially among older adults and widowed individuals, strongly underscores the need for targeted, sustained community-based screening and early detection initiatives. The Family Adoption Programme (FAP) framework provides an ideal platform to implement these regular screenings, paired with tailored follow-up

services. Furthermore, health education programs must be expanded beyond cardio-metabolic conditions to address the notable awareness deficit regarding chronic respiratory diseases like COPD.

Limitations

The cross-sectional design prevents establishing causal relationships. Additionally, reliance on consecutive convenience sampling from a limited geographic area restricts broader generalizability. The study also did not assess specific behavioral risk factors (e.g., diet, physical activity, tobacco use) or conduct long-term blood pressure monitoring, which could result in misclassification.

CONCLUSION

The high prevalence of hypertension and moderate chronic disease awareness highlight a vital need for strengthened community-based screening and health education. The FAP framework should be aggressively utilized to launch targeted interventions—particularly for older, high-risk demographic groups—and to elevate public awareness of under-recognized conditions like COPD.

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