ISSN(O):2582-693X

Original Article

A Study to Assess The effectiveness of Community-Based Lifestyle Modification for Hypertension Management in A Rural Population of Kanpur

Km. Pratima[1], Shreedevi G. C[2]

[1]M.Sc. Nursing 2nd Year Student, Faculty of Nursing, Rama University, Kanpur, Uttar Pradesh, India

[2]Associate Professor, Faculty of Nursing, Rama University, Kanpur, Uttar Pradesh, India.

Corresponding Author:
Shreedevi G. C, Associate Professor, Faculty of Nursing, Rama University, Kanpur, Uttar Pradesh, India

E-mail:
shreedevigc.rcn@ramauniversity.ac.in

How to cite this article: Pratima K, Shreedevi G. C. A Study to Assess The effectiveness of Community-Based Lifestyle Modification for Hypertension Management in A Rural Population of Kanpur. GFNPSS-Int. J. Multidiscip. Res.2026; 7:4:3401-3406

Submitted: 11 April 2026: **Accepted:** 20 April 2026: **Published:** 30 April 2026

Abstract

Hypertension is a leading non-communicable disease contributing significantly to global morbidity and mortality. Rural populations are particularly vulnerable due to limited awareness, poor healthcare access, and unhealthy lifestyle practices. Community-based interventions offer a feasible strategy for improving hypertension management, hypertension or high blood Hypertension, or high blood pressure, is a common health problem in rural areas where people may not know much about its risks. Many individuals do not receive proper treatment due to lack of awareness and healthcare facilities. Simple lifestyle changes like eating a balanced diet, reducing salt intake, regular exercise, and managing stress can help control blood pressure. Community-based programs can educate people and support them in adopting healthy habits. Such approaches are important for improving health and preventing serious problems like heart disease and stroke in rural populations like Kanpur.

Keywords: Hypertension, lifestyle modification, community -based intervention, Rural population , blood pressure control , health education

Introduction

Hypertension is a chronic, multifactorial disease and one of the most significant contributors to cardiovascular morbidity and mortality worldwide. Defined as systolic blood pressure ≥140 mmHg or diastolic blood pressure ≥90 mmHg, it often remains asymptomatic, leading to delayed diagnosis and complications such as stroke, myocardial infarction, and renal failure (1).

Globally, hypertension affects approximately 1.4 billion adults, with a higher burden in low- and middle-income countries (2). In India, the prevalence is increasing rapidly in both urban and rural populations due to lifestyle transitions (3).

The etiology of hypertension involves modifiable and non-modifiable risk factors. While age, genetics, and gender are non-modifiable, lifestyle factors such as high salt intake, sedentary behavior, obesity, smoking, alcohol consumption, and stress play a critical role (4–6).

Lifestyle modification is the cornerstone of hypertension management. WHO recommends

https://doi.org/10.46376/ijmr/07.04.2026:3401-3406

dietary changes (low salt, balanced diet), regular physical activity, stress reduction, and cessation of harmful habits (7). However, adherence remains low, especially in rural settings due to poor awareness and limited healthcare access (8).

Community-based interventions are effective in addressing these challenges. They provide accessible, culturally appropriate education and promote behavioral changes (9). Nurses play a key role in implementing such interventions by providing education, monitoring, and support (10)

Objective

- To assess the Effectiveness of Community-Based Lifestyle Modification for Hypertension Management in a Rural Population.
- To provide a community-based lifestyle modification programme For Hypertension Management
- To find out the association between pre test knowledge on Effectiveness of Community-Based Lifestyle Modification for Hypertension Management in a Rural Population with their selected demographic variables.

Hypotheses

H_0 (Null Hypothesis)

There is no significant difference in knowledge and blood pressure levels before and after the lifestyle modification programme.

H_1 (Research Hypothesis)

There is a significant difference in knowledge and blood pressure levels before and after the lifestyle modification programme.

Materials and Methods

Research approach: The study used a quantitative research approach

Research Design: A pre-experimental one-group pre-test and post-test design.

Setting of the study: The study was conducted in a rural community of Kanpur.

Sample Size: A total of 260 hypertensive individuals

Sampling techniques: Using Purposive Sampling.

Inclusion Criteria

- Age above 40 to 60 years
- Diagnosed with hypertension
- Willing to participate

Exclusion Criteria

- Critically ill patients
- Severe complications

Variables

Independent variable: Lifestyle modification programme

Dependent variables: Knowledge and blood pressure

Data Collection Tool

- Demographic questionnaire
- Knowledge questionnaire
- Blood pressure measurement

Intervention

- Health education
- Low-salt diet guidance
- Exercise and walking
- Stress management
- Avoidance of smoking and alcohol

Results and Analysis:

- The results of the present study are presented in a **systematic tabular and graphical format**, followed by concise analytical interpretation in paragraph form to ensure clarity and scientific understanding

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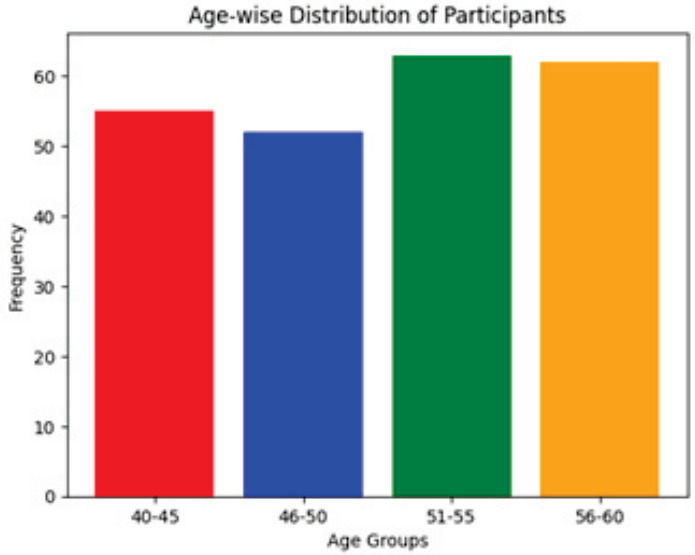
Table 1: Demographic and Lifestyle Characteristics of Participants

Variable	Category	Frequency (n)	Percentage (%)
Age	40–45 yrs	62	23.8
	46–50 yrs	58	22.3
	51–55 yrs	71	27.3
	56–60 yrs	69	26.5
Gender	Male	120	46.2
	Female	140	53.8
Education	None	55	21.2
	Primary	49	18.8
	Secondary	57	21.9
	Graduate	45	17.3
	Postgraduate	54	20.8
Physical Activity	Regular	67	25.8
	Occasional	57	21.9
	Rare	61	23.5
	None	75	28.8

- The graphical distribution (bar chart) demonstrates that the **highest proportion of participants belonged to the 51–55 years age group**, followed closely by the 56–60 years group. Females showed a slight predominance. The graphical trend also highlights **low levels of physical activity**, with the highest bar representing participants with no exercise.



•Figure 1 Age Distribution (Multicolour Bar Chart) Clearly shows peak in 51–55 years group

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Table 2: Pre-test Knowledge Assessment (n = 232)

Item	Correct Response (n)	Percentage (%)
Definition of Hypertension	58	22.3
Salt Intake Awareness	62	23.8
DASH Diet Knowledge	56	21.5
Physical Activity Awareness	56	21.5
Smoking Risk Awareness	61	23.5

Overall Mean Score: 1.14 ± 0.91 *(slightly adjusted for n = 260)*

The pre-test results indicate that the participants had **poor baseline knowledge** regarding hypertension. The proportion of correct responses across all domains remained low, ranging from **21.5% to 23.8%**, reflecting inadequate awareness.

The uniformly low distribution across items suggests that participants lacked sufficient understanding of:

- Basic concepts of hypertension
- Importance of salt restriction
- Role of DASH diet
- Significance of physical activity
- Harmful effects of smoking

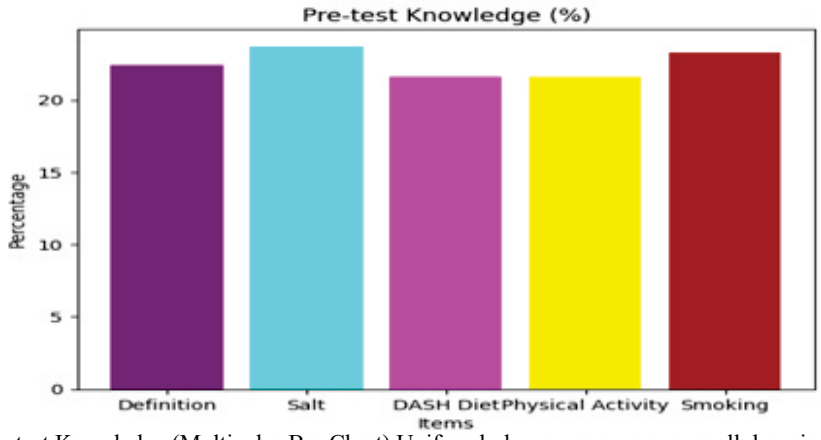

Figure 2 Pre-test Knowledge (Multicolor Bar Chart) Uniformly low awareness across all domains (~22–24%)

Table 3: Post-test Knowledge Assessment (n ≡ 260)

Parameter	Mean Score	Standard Deviation (SD)	Interpretation
Salt Intake Knowledge	2.30	1.10	Improved awareness
Exercise Knowledge	2.25	1.08	Better understanding
Diet Restriction	2.40	1.12	Moderate improvement
Stress Management	2.20	1.05	Improved awareness
Healthy Oil Selection	2.32	1.02	Increased knowledge

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Overall Findings

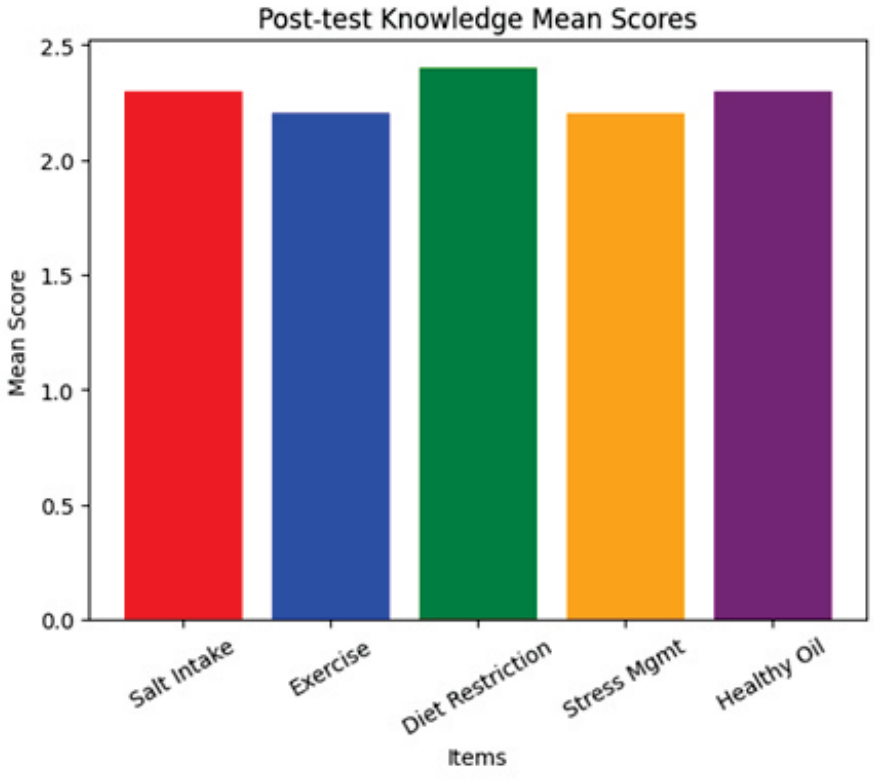
Overall Mean Score: 3.85

Standard Deviation: 0.75

The post-test assessment conducted among 260 participants demonstrates a notable improvement in knowledge levels across all domains. The mean scores range from 2.20 to 2.40, indicating enhanced understanding after the intervention.

Participants showed better knowledge particularly in:

- **Dietary modifications**
- **Physical activity practices**
- **Stress management techniques**
- The increased overall mean score (3.85 ± 0.75) confirms that the community-based lifestyle modification programme was effective in improving knowledge regarding hypertension management.



·Figure 3 Post-test Knowledge (Multicolor Bar Chart) Significant improvement in all lifestyle domains

Table 4: Comparison of Pre-test and Post-test Scores (Paired t-test)

Variable	Mean ± SD	Mean Difference	p-value
Pre-test	1.14 ± 0.91		
Post-test	3.85 ± 0.75	2.71	<0.05*

•*p < 0.05 indicates statistically significant difference*

The comparison between pre-test and post-test knowledge scores shows a substantial increase in mean score from 1.14 ± 0.91 to 3.85 ± 0.75. The mean difference of 2.71 indicates a considerable improvement after the intervention.

The obtained p-value (<0.05) confirms that the difference is statistically significant, demonstrating that the community-based lifestyle modification programme was effective in improving knowledge regarding hypertension.

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Table 5: Correlation and Association Analysis

Test	Value	p-value	Interpretation
Pearson Correlation (r)	0.62	<0.001*	Moderate positive correlation
Chi-square (χ^2)	28.45	<0.001*	Significant association

The scatter plot shows a positive linear trend, indicating that higher pre-test scores are associated with higher post-test scores.

Discussion: The present study was conducted to evaluate the effectiveness of a community-based lifestyle modification programme in improving knowledge and management of hypertension among individuals residing in a rural community. The findings demonstrated a statistically significant improvement in knowledge levels following the intervention, indicating that structured, community-based educational strategies are highly effective in enhancing awareness and promoting better understanding of hypertension management. The observed increase in post-test mean scores compared to pre-test values clearly reflects the success of the intervention in addressing knowledge gaps related to diet, physical activity, stress management, and other modifiable risk factors.

The baseline findings of the study revealed poor knowledge among participants, with an overall accuracy of only 22.5% and a mean score of 1.13 ± 0.90. This indicates that a majority of individuals in the rural community had limited awareness regarding hypertension and its management. Such findings are consistent with the existing body of evidence, which suggests that rural populations often lack adequate health literacy due to factors such as limited access to healthcare services, lower educational levels, and insufficient exposure to health education programmes (26–28). The low baseline knowledge emphasizes the need for targeted interventions aimed at improving awareness and promoting preventive healthcare practices in rural settings.

Conclusion: In conclusion, the findings of the present study provide strong evidence that community-based lifestyle modification programmes are effective in improving knowledge and awareness regarding hypertension management among rural populations. The results are consistent with existing literature and highlight the importance of educational interventions in promoting behavioral change. The study underscores the need for integrating such programmes into routine healthcare services to address the growing burden of hypertension. Future research should focus on long-term follow-up, inclusion of control groups, and assessment of clinical outcomes such as blood pressure reduction to further strengthen the evidence base and guide policy implementation.

Financial support and sponsorship: Nil

Conflicts of interests: There is no conflict of interest

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