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RESEARCH ARTICLE

Impact of Lifestyle Modification Counseling on Hypertension Control in Opd patients: a Prospective Observational Study

Dhirendra Kumar*, Shiv Purari, Sujit Kumar, Sanjay Kumar

ABSTRACT

Background: Hypertension is a significant modifiable risk factor of cardiovascular morbidity and mortality across the globe. Lifestyle modification counseling plays a critical role in blood pressure (BP) management, especially in outpatient settings.

Objective: To evaluate the role of structured lifestyle modification counseling on the control of blood pressure among patients with hypertension attending the outpatient department (OPD).

Methods: This study was conducted at a tertiary care center in Bihar. A total of 130 hypertensive patients were enrolled over a 9-month period (April 2025 to December 2025), and each participant was followed up for 3 months. Baseline demographic, clinical, and lifestyle parameters were recorded. Patients received standardized counselling. Blood pressure readings were recorded at baseline and follow-up visits. Statistical analysis was performed using paired t-test and chi-square test.

Results: Mean systolic BP reduced significantly from 152.4 ± 12.6 mmHg at baseline to 136.8 ± 10.2 mmHg at 3 months ($p < 0.001$). Mean diastolic BP decreased from 94.2 ± 8.4 mmHg to 84.6 ± 6.8 mmHg ($p < 0.001$). The proportion of patients achieving BP control increased from 18.5% to 62.3% ($p < 0.001$).

Conclusion: Lifestyle modification counseling significantly improves blood pressure control in hypertensive OPD patients. Incorporating structured counseling into routine clinical practice can enhance hypertension management outcomes.

Keywords: Hypertension, Lifestyle modification, Counseling, Blood pressure control, OPD

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INTRODUCTION

Hypertension remains a major global public health challenge, contributing significantly to cardiovascular diseases, stroke, and renal failure [1]. According to the World Health Organization, approximately 1.28 billion adults aged 30–79 years worldwide suffer from hypertension, with a large proportion residing in low- and middle-income countries [2]. In India, the prevalence of hypertension has been steadily increasing due to urbanization, sedentary lifestyle, and dietary changes [3].

Effective management of hypertension involves both pharmacological and non-pharmacological strategies [4]. Lifestyle modification is a cornerstone of hypertension control and includes dietary changes, physical activity, weight management, reduced salt intake, and avoidance of tobacco and alcohol [5]. The Dietary Approaches to Stop Hypertension (DASH) diet has demonstrated substantial reductions in blood pressure [6].

Despite strong evidence supporting lifestyle interventions, adherence remains suboptimal among patients [7]. Counseling by healthcare providers has been shown to improve compliance and facilitate behavioral changes [8]. Structured lifestyle counseling can empower patients and enhance self-management [9].

Outpatient departments serve as a primary contact

Department of General Medicine, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India

Corresponding Author: Dhirendra Kumar, Department of General Medicine, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India. E-Mail:sk95dhiru@gmail.com

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point for chronic disease management, providing an opportunity for repeated reinforcement of lifestyle advice [10]. However, data on the effectiveness of such counseling in real-world OPD settings, especially in rural or semi-urban Indian populations, are limited [11].

This study aims to evaluate the impact of structured lifestyle modification counseling on blood pressure control among hypertensive patients attending the OPD at a tertiary care center in Bihar.

MATERIALS AND METHODS

Study Setting

This study was conducted at Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Bihar, over a period of 9 months(April 2025 to Dec 2025).

Study Population

A total of 130 patients diagnosed with hypertension attending the OPD were included.

Inclusion Criteria

- Age ≥ 18 years
- Diagnosed hypertension (SBP ≥ 140 mmHg and/or DBP ≥ 90 mmHg)
- Willing to participate

Exclusion Criteria

- Pregnant women
- Secondary hypertension
- Severe comorbid conditions

Intervention

All participants received structured lifestyle counseling including

- Low-salt diet (<5 g/day)
- Regular physical activity (≥150 minutes/week)
- Weight reduction
- Smoking cessation
- Alcohol restriction
- Stress management techniques

Data Collection

Baseline BP and follow-up BP at 3 months were recorded using a standardized sphygmomanometer.

Statistical Analysis

Data were analyzed using SPSS version 25. Continuous variables were expressed as mean ± SD. Paired t-test was used to compare BP changes. Chi-square test was applied for categorical variables. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 130 hypertensive patients were included in the analysis. All participants completed the 3-month follow-up, and no data were lost during the study period.

Table 1: Baseline Characteristics of Study Participants (n=130)

Variable	*Value*
Mean Age (years)	54.3 ± 11.2
Male (%)	58%
Female (%)	42%
Mean BMI (kg/m²)	27.1 ± 3.4
Smokers (%)	32%
Alcohol users (%)	28%

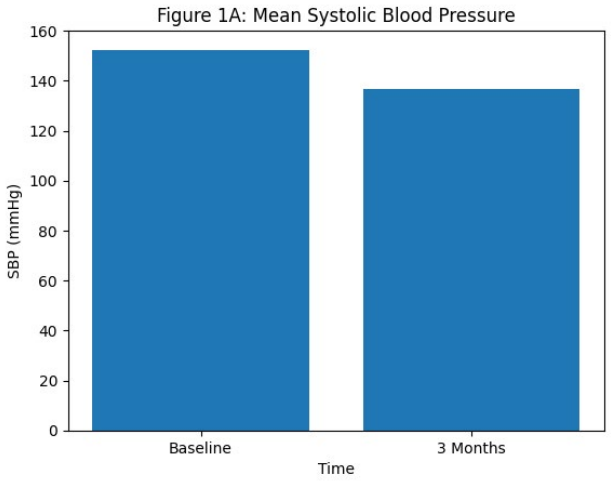

Figure 1A: Mean Systolic Blood Pressure at Baseline and 3 Months

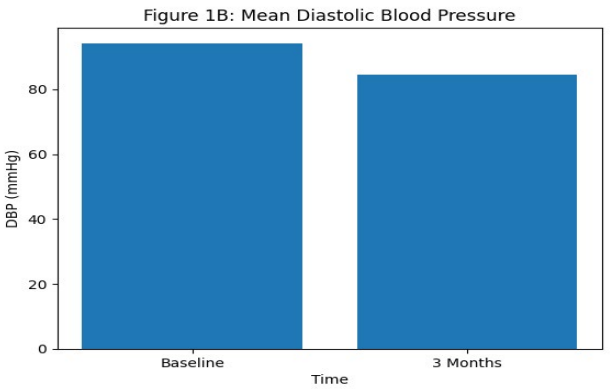

Figure 1B: Mean Diastolic Blood Pressure at Baseline and 3 Months

Table 2: Comparison of Blood Pressure Before and After Intervention

	Baseline	*3 Months*	*Mean Difference*	*p-value*
SBP (mmHg)	152.4 ± 12.6	136.8 ± 10.2	15.6 mmHg	<0.001
DBP (mmHg)	94.2 ± 8.4	84.6 ± 6.8	9.6 mmHg	<0.001

Baseline Characteristics

Males constituted 58% (n=75) and females 42% (n=55). A notable proportion of participants reported modifiable risk factors, including smoking (32%) and alcohol consumption (28%). These baseline demographic and clinical details are summarized in Table 1.

Changes in Blood Pressure Following Counseling

A marked reduction in both systolic and diastolic blood pressure was observed after 3 months of lifestyle modification counseling. These reductions were statistically highly significant ($p < 0.001$), as shown in Table 2.

Blood Pressure Control Status

At baseline, only 18.5% (n=24) of patients had controlled blood pressure (<140/90 mmHg). Following the intervention, this proportion increased substantially to 62.3% (n=81). The improvement in control rates was statistically significant ($\chi^2 = 46.2$, $p < 0.001$). These findings are presented in Table 3.

Graphical Representation of Blood Pressure Reduction

The decline in mean systolic and diastolic blood pressure from baseline to 3 months is illustrated in **Figure 1A and Figure 1B**. The graphical trend clearly demonstrates a consistent reduction following lifestyle counseling.

Summary of Key Findings

The intervention resulted in:

- A significant reduction in mean systolic BP by 15.6 mmHg
- A significant reduction in mean diastolic BP by 9.6 mmHg
- A more than threefold increase in BP control rates

Table 3: Blood Pressure Control Status Before and After Counseling

Status	Baseline (n, %)	3 Months (n, %)	p-value
Controlled	24 (18.5%)	81 (62.3%)	<0.001
Uncontrolled	106 (81.5%)	49 (37.7%)	

All observed changes were statistically significant, indicating a strong association between lifestyle counseling and improved hypertension outcomes.

DISCUSSION

This study demonstrates that structured lifestyle modification counseling significantly improves blood pressure control among hypertensive patients in an OPD setting. The reduction in both systolic and diastolic BP observed in this study aligns with previous findings [12,13].

The significant improvement in BP control rates highlights the importance of non-pharmacological interventions in hypertension management.[14] Similar studies have reported that counseling interventions enhance adherence to lifestyle changes.[15,16]

Dietary modification, particularly salt restriction, has been shown to reduce BP effectively [17]. Physical activity contributes to improved cardiovascular health and BP reduction [18]. Smoking cessation and alcohol moderation further reduce cardiovascular risk [19].

The findings of this study are consistent with community-based interventions showing improved outcomes with regular counseling [20]. OPD-based counseling provides a feasible and cost-effective approach (21).

However, patient adherence remains a challenge, influenced by socio-economic and educational factors [22]. Repeated counseling and follow-up visits are essential for sustained benefits [23].

The study is limited by its short follow-up duration and lack of a control group [24]. Future randomized controlled trials with larger populations are recommended [25].

CONCLUSION

Lifestyle modification counseling is an effective strategy for improving blood pressure control in hypertensive patients. Integrating structured counseling into routine OPD care can significantly enhance treatment outcomes.

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