



Received on 08 July 2023; received in revised form, 13 January 2024; accepted, 28 January 2024; published 01 February 2024

EFFECT OF CUSTOMIZED DASH DIET AND LIFESTYLE MODIFICATION ON BLOOD PRESSURE AMONG STAGE-1 HYPERTENSIVE INDIVIDUALS

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Keywords:

Cardiovascular diseases, DASH diet, High blood pressure, Lifestyle changes

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ABSTRACT: This study aims to evaluate the impact of a personalized DASH diet and lifestyle modifications on blood pressure levels in individuals diagnosed with stage-1 hypertension. An observational study with purposive sampling was carried out over one-year duration, specifically from April 2022 to March 2023. Data was gathered through a self-structured interview schedule questionnaire and subjected to descriptive statistical analysis. The study subjects were provided with interventions targeting lifestyle modifications and implementation of a customized DASH diet. Post-intervention changes were recorded during the follow-up 2. The paired t-test was employed to determine the significant differences in systolic and diastolic blood pressure. A total of 300 individuals diagnosed with stage-1 hypertension participated in the study, with a mean age of 47.19 (SD: 12.68). The study population consisted of 63% females (n=189) and 37% males (n=111). Results of the study revealed a significant decrease in both systolic ($P < 0.001$) and diastolic ($P < 0.001$) blood pressure levels among the participants who underwent a customized DASH diet and incorporated lifestyle changes into their daily routines. Furthermore, a significant difference was observed in the changes of systolic (P value – 0.001) and diastolic blood pressure (P value – 0.001) between two groups: group I, which received the customized DASH diet alone, and group II, which received the customized DASH diet along with lifestyle modifications. In individuals with stage-1 hypertension, the implementation of a personalized DASH diet and lifestyle modifications plays a crucial role as an effective initial treatment strategy, complementing medication use. This approach proves beneficial for individuals who already have borderline high blood pressure, leading to a reduction in cardiovascular risk factors.

INTRODUCTION: High blood pressure (hypertension) is recognized as a significant risk factor for cardiovascular diseases, contributing to a considerable number of deaths, particularly among middle-aged and older adults in developing countries. Recent scientific studies estimate that approximately 7.1 million deaths can be attributed to elevated blood pressure levels¹.

The impact of hypertension on cardiovascular health underscores the importance of effective interventions, such as personalized DASH diet and lifestyle modifications, in managing and reducing the burden of this condition².

These interventions have been shown to be beneficial in lowering blood pressure and improving cardiovascular outcomes in hypertensive individuals, thereby playing a crucial role in preventing related deaths and promoting better health outcomes³. The DASH (Dietary Approaches to Stop Hypertension) diet, initially designed to target hypertension, shares considerable similarities with the current dietary recommendations outlined in "Eating Well with Canada's Food Guide" and the

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| <p>QUICK RESPONSE CODE</p>  | <p>DOI: 10.13040/IJPSR.0975-8232.15(2).584-87</p> <hr/> <p>This article can be accessed online on www.ijpsr.com</p> <hr/> <p>DOI link: https://doi.org/10.13040/IJPSR.0975-8232.15(2).584-87</p> |
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Canadian Hypertension Education Program (CHEP) guidelines, although it is not an exact match. These guidelines provide evidence-based dietary recommendations for managing blood pressure and promoting overall health ⁴.

The DASH diet emphasizes the consumption of fruits, vegetables, whole grains, lean proteins, and low-fat dairy products, while limiting the intake of saturated fats, added sugars, and sodium ⁵.

MATERIALS AND METHODS: Objective of this study is to evaluate the impact of an individualized DASH diet and modifications to lifestyle on blood pressure levels among individuals diagnosed with stage-1 hypertension.

Study Design & Period of Data Collection: This study employs a purposive observational design to investigate the effect of a customized DASH diet and lifestyle modifications on blood pressure in individuals with stage-1 hypertension. The current study was conducted over one-year duration, specifically from April 2022 to March 2023. Study was conducted at Ayodhya District Hospital, located in Uttar Pradesh, as the primary research site.

All eligible patients meeting the inclusion criteria were recruited from the outpatient departments of Ayodhya District Hospital. Data collection involved conducting personal interviews with stage-1 hypertensive patients to gather the necessary information. As part of the intervention, all patients were provided with a customized DASH diet and implemented lifestyle modifications in their daily routines. Throughout the one-year study period, a total of 300 participants were included in the sample size for this study. Data obtained from the participants were entered into a Microsoft Excel spreadsheet for further analysis. Descriptive statistics, including the calculation of mean, standard deviation (SD), and P values, were performed using SPSS version 26.

RESULTS:

Distribution of Respondents on the Basis of their Age and Gender: Study enrolled a total of 300 participants diagnosed with stage-1 hypertension. The mean age ± standard deviation (SD) of the participants was 47.19 (12.68) years. The study population comprised 189 (63%) female participants and 111 (37%) male participants.

TABLE 1: DISTRIBUTION OF RESPONDENTS ON THE BASIS OF THEIR AGE AND GENDER

| Age (Yrs.) | N | % |
|---|-----|-------|
| < 40 | 115 | 38.3 |
| 40-55 | 101 | 33.7 |
| >55 | 84 | 28.0 |
| Total | 300 | 100.0 |
| Average age of the respondents ± SD = 47.19 ±12.68 | | |
| Gender | | |
| Male | 111 | 37.0 |
| Female | 189 | 63.0 |

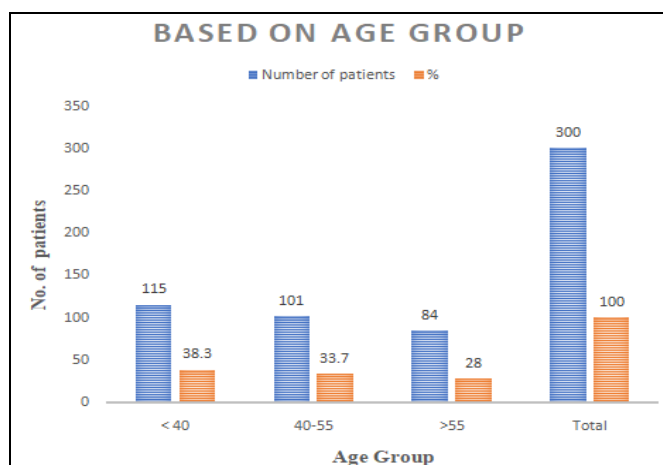


FIG. 1: GRAPHICAL REPRESENTATION OF DIFFERENT AGE GROUPS IN PERCENTAGE (%)

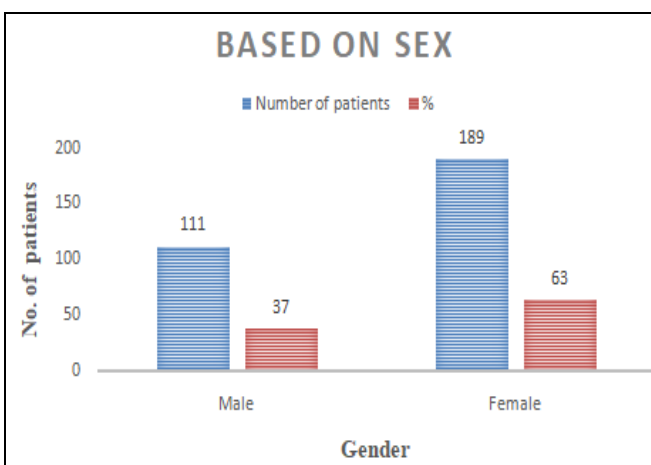


FIG. 2: GRAPHICAL REPRESENTATION OF DIFFERENT GENDER IN PERCENTAGE (%)

Effect of Customized DASH Diet and Lifestyle Modification on Blood Pressure in Stage-1 Hypertensive Patients:

In the current study, the customized DASH diet and lifestyle modifications demonstrated a significant reduction in both systolic ($P < 0.001$) and diastolic ($P < 0.001$) blood pressure levels among stage-1 hypertensive

patients. This effect was observed in both experiment groups: experiment group I, which received the customized DASH diet only, and experiment group II, which received the customized DASH diet along with lifestyle modifications **Table 2**.

TABLE 2: EFFECT OF CUSTOMIZED DASH DIET AND LIFESTYLE MODIFICATION ON BLOOD PRESSURE IN STAGE-1 HYPERTENSIVE PATIENTS

| Variables | Systolic Blood Pressure Stage-1 | | | | | | | | |
|----------------------------------|---------------------------------|------|--------|-------|------------|-------|---------------|----|--------|
| | Pre | | Post | | Difference | | Paired t test | df | P |
| | Mean | SD | Mean | SD | Mean | SD | | | |
| Control Group | 141.84 | 5.41 | 142.03 | 7.09 | -.19 | 5.29 | .34 | 89 | >0.05 |
| Experiment Group I | 144.29 | 6.15 | 134.92 | 10.17 | 9.37 | 12.12 | 7.05 | 82 | <0.001 |
| Experiment Group II | 147.13 | 7.30 | 131.87 | 5.32 | 15.26 | 8.91 | 15.03 | 76 | <0.001 |
| Diastolic Blood Pressure Stage-1 | | | | | | | | | |
| Control Group | 95.42 | 4.49 | 94.83 | 5.24 | .59 | 4.22 | 1.33 | 89 | >0.05 |
| Experiment Group I | 96.48 | 4.59 | 86.69 | 3.65 | 9.80 | 4.65 | 19.20 | 82 | <0.001 |
| Experiment Group II | 95.78 | 4.60 | 84.86 | 3.05 | 10.92 | 5.73 | 16.73 | 76 | <0.001 |

DISCUSSION: Present study demonstrated a significant decrease in both systolic ($P < 0.001$) and diastolic ($P < 0.001$) blood pressure levels among participants in both experiment groups, I and II, who underwent a customized DASH diet and lifestyle modification in their daily lives.

The study findings indicate that implementing a customized DASH diet and lifestyle modification can have a positive impact on blood pressure in adults, especially those with an average systolic blood pressure of 135mm Hg and diastolic blood pressure ranging from 80 to 85mm Hg.

It was observed that individuals under the age of 40 years constituted the most affected age group among the total study population of 300 patients. Considering the stage-1 hypertension diagnosis, lifestyle modification is recommended for all patients. In addition to the primary objective of reducing blood pressure, adopting the recommended lifestyle changes can yield various health benefits and contribute to better outcomes for common chronic diseases.

Limitation of the Study: Study included a single follow-up assessment to examine the impact of a customized DASH diet and lifestyle modification on blood pressure changes within the study's limited timeframe. This allowed for the observation of any alterations in blood pressure levels among the participants.

CONCLUSION: Lifestyle modification is widely recognized as a crucial and effective first-line treatment strategy for managing hypertension. Alongside the significant reduction in blood pressure achieved through dietary changes, such as following the DASH diet, adopting healthy lifestyle habits can offer additional cardiovascular benefits. These lifestyle modifications include moderating alcohol consumption, weight management, engaging in regular physical activity, and quitting smoking. Irrespective of other indicated treatments, it is imperative to provide advice and support to all patients aiming to lower their blood pressure and help them maintain healthy behaviors.

Special attention and education are required for individuals with unique cases, as they may exhibit fluctuating systolic and diastolic readings and be at a higher risk of developing end-organ damage. Regular patient check-ups and ongoing monitoring by healthcare professionals are essential to prevent cardiovascular complications and risks.

The responsibility of healthcare professionals extends to educating patients about the significance of lifestyle modifications, as these improvements can positively impact the overall health status of the community.

ACKNOWLEDGEMENTS: I would like to sincerely express my gratitude and deep respect to my research guide, Prof. Kalpna Gupta, for her

invaluable guidance, unwavering support, and insightful suggestions provided throughout the course of this research. Her mentorship has been a constant source of inspiration, contributing significantly to the progress and quality of the study.

CONFLICTS OF INTERESTS: Authors confirm that they do not have any competing interests to disclose in relation to this study.

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How to cite this article:

Parvati and Gupta K: Effect of customized dash diet and lifestyle modification on blood pressure among stage-1 hypertensive individuals. *Int J Pharm Sci & Res* 2024; 15(2): 584-87. doi: 10.13040/IJPSR.0975-8232.15(2).584-87.

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