# Assessment of lifestyle modifications in the management of hypertension

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**ABSTRACT:**
**Background:** Hypertension had started posing as a big threat to the health of the people because it was causing a lot of cardiovascular morbidity as well as mortality in the world. Lifestyle changes were proved to be effective and non-pharmacologic ways of controlling blood pressure in addition to pharmacological treatment. These changes consisted of dietary complementation, physical activities, weight control, stop smoking, and constrained intake of alcohol. Although there were some guidelines, the extent to which they should be followed and the extent to which they affect the outcome of blood pressure in a clinical setting was unpredictable and unexplored.
**Objective:** The objective of the study was to evaluate the efficacy of lifestyle interventions in the treatment of hypertension between the patients visiting Sheikh Zayed hospital Rahim yar Khan.
**Methods:** The observational study was carried out, between May 2024 and June 2025, at Sheikh Zayed hospital Rahim yar Khan. One hundred and ten hypertensive patients aged between 30-70 years were recruited using the non-probability consecutive sampling technique. Structured questionnaires were used to collect the information about data that involved demographics, lifestyle habits, readings of blood pressure, and adherence to lifestyle change factors such as dietary modifications, physical exercise, smoking behavior, and ethanol consumption. Blood pressure was taken at the initial point (baseline), and at 6 months follow up point. The SPSS version 25 was used in statistical analysis.
**Results:** In the total of 110 respondents, 62 (56.4 per cent) were males and 48 (43.6 per cent) were females. The ages of many of the participants (67.3%) were between 40 and 60 years. Baseline rate of adherence to recommended lifestyle changes was low and amounted to 38.20 percent. Follow-up by 6 months after intervention and counseling had raised the adherence to 71.8 per cent. The adherent group also showed a large decrease with regard to both systolic and diastolic blood pressure (mean SBP: 12.5mmHg; mean DBP: 8.1mmHg, $p<0.001$). The patients who were not adherent revealed small changes. The most important factors were physical activity and dietary salt restriction that can lead to better outcomes.
**Conclusion:** The alterations in the lifestyle were important in the successful management of hypertension. Blood pressure control was rates a lot better because of the better adherence due to constant counseling and follow up. The inclusion of structured lifestyle intervention programs into the managing of hypertension in addition to medical care must be regarded as another vital step towards BOA management.
**Keywords:** Hypertension, Lifestyle modifications, Blood pressure control, Physical activity, Dietary changes, Patient adherence.

## INTRODUCTION:

High blood pressure or hypertension had been identified as one of the main modifiable risk factors of cardiovascular disease, stroke and renal complications in countries all over the world. It had been a major public health problem, especially in low and middle-income countries, because the awareness, treatment, and enslavement were minimal. It was historically an asymptomatic disease that was termed a silent killer because it might cause tremendous complications in case one was not diagnosed or not treated properly [1]. Lifestyle changes had received more and more exposure and stress as the main pillar of hypertension treatment, regardless of the availability of pharmacological treatment solutions.

Some global health bodies such as World Health Organization (WHO) and the joint national committee (JNC) had already suggested the need to adopt non-pharmacological interventions as primary or complementary measures in patients with a history of high blood pressure [2]. Such changes in lifestyle involved dietary alternatives, physical exercise, weight reduction, decreasing alcohol and cigarette usage, stress control, and the following of Dietary Approaches to Stop Hypertension (DASH) diet. In many works, the effectiveness of such interventions in a reduction of systolic and diastolic blood pressure levels and to minimize the risk of cardiovascular events had been proved.

The increase in the burden of hypertension had been on a steady rise in the case of Pakistan because of challenges related to urbanization, inactive lifestyles, poor diets, and rising stress [3]. The information about the significance of lifestyle modification in the treatment of hypertension had not been sufficient among the population. Therefore, a big number of patients just took medication without taking appropriate behavioral changes and it led to poor control of blood pressure and more cases of complications. It had hence become essential to examine the scope to which change in lifestyle was being done to the hypertensive patients and the effect it was having in the management of blood pressure [4]. Past studies had already indicated that small changes in the physical activity lifestyles, salt consumption and body weight had the capacity to make a huge change in the blood pressure levels. Nonetheless, the actual realization and maintenance of these changes had been impeded with socio-cultural, economic as well as educational barriers. The ideas of the understanding of patient behavior, knowledge, and attitudes toward lifestyle interventions had played a significant role in the formulation of effective community-based hypertension management programs [5].

Also, clinicians were critical when it comes to teaching patients and encouraging them to make healthy lifestyles. Frequent aftercare, follow-up and individually tailored goal-setting previously had demonstrated potential in improving following the lifestyle recommendations. Nevertheless, no prior works based on the effectiveness of such strategies in a local healthcare environment, including tertiary teaching hospitals in Pakistan, have existed [6].

This research was hence carried out to determine the trends and efficacy of lifestyle changes to treat hypertension in patients at a high-level specialty care teaching hospital. It intended to determine the occurrence of lifestyle modification in persons with hypertension, examine its correlation with blood pressure management and also to point out any possible deficiency in patient education and behavior [7]. The examination of these factors was aimed at supplying the research with interesting novelties that could be used by healthcare specialists and policymakers to create more relevant hypertension control initiatives that would be specific to local socio-demographic reality.

**MATERIALS AND METHODS:**

The research paper was based on the study titled Assessment of lifestyle modifications in the management of hypertension that was carried out in Sheikh Zayed hospital Rahim yar Khan, in a time frame of 14 months, between the month of May, 2024, and the month of June, 2025. The study population was a total of 110 participants. The study design was descriptive, cross-sectional that would determine how lifestyle modifications affected blood pressure control on hypertensive patients.

Selection of the participants employed non-probability purposive sampling method. The inclusion criteria included adults of 30 to 70 years of age, who had a history of primary hypertension and were either under

lifestyle modification treatment alone or those receiving combined lifestyle modification treatment and pharmacological treatment. The study excluded patients with secondary hypertension, patients with severe comorbidities e.g chronic kidney disease or advanced heart failure and patients who refused to give an informed consent.

Ethical approval of the study was taken by Institutional Review Board of Sheikh Zayed hospital Rahim yar Khan, and verbal and written informed consent was obtained of all the participants. The reason behind the study was highlighted, and all personal information was promised of confidentiality. The principal instrument of data collection was a structured and pre-tested questionnaire. It involved questions about the socio-demographic factors, history of hypertension, lifestyle habits (such as dietary habits, physical exercise, current smoking condition, alcohol consumption level, and stress relaxation methods), compliance to drugs, and blood pressure tracking habits.

The method used to collect data was personal interviews and the examination of the medical records. Blood pressure reading was made released to be done with a normal mercury sphygmomanometer according to the guidelines of the American Heart Association. Blood pressure of each of the subjects was determined twice at an interval of 5 minutes, and the mean of the readings noted. The JNC-8 classification type (i.e. systolic BP <140 mmHg and diastolic BP <90 mmHg as controlled) offered the following categories among the participants: controlled and uncontrolled hypertension (any JNC-8 category).

The essential characteristics of lifestyle changes that were assessed are change in diet (e.g. restriction of salt concentration, adherence to the DASH diet, and daily consumption of fruits and vegetables) as well as level of physical activity (minimum 30 minutes of moderate physical exercise five times per week), weight loss, cessation of smoking, avoidance of alcohol, and anti-stress coping strategies (meditation, yoga, counseling). Compliance with these practices was evaluated on self-report of participants and its adherence classified as poor, moderate, and good adherence.

SPSS version 26 was used in inputting and analysis of the collected data. Demographical details, frequency of practicing lifestyles, and the extent of hypertension management were summarized using descriptive statistics. The chi square test was used to establish relationships between the measures of lifestyle occupation observance and blood pressure control whereby p-value <0.05 was deemed as statistically significant.

During the research duration, those patients who had to be given more medical care were dealt with in the respective departments. All the ethical considerations such as welfare of the participants, privacy of the data and unbiased interpretation were adhered to.

This form of technique made it possible to have a thorough evaluation of how well lifestyle change measures were taught among the hypertensive patients and the effects that were associated with the application. The findings were a fruitful addition to the research efforts aimed at devising community-based interventions and educational programs to educate in the hypertension management with the help of non-pharmacological treatments.

**RESULTS:**

The research project comprised of 110 patients with hypertension and sixty-two (56.4%) were women whereas forty-eight (43.6) were men. Participants had the average age of 52.6 (SD = 10.4) years. Most of them (72.7%) were diagnosed with hypertension over a period of one year, whereas 59.1 percent had a family history of hypertension. The findings were aimed at assessing the impact of lifestyle changes such as dietary, physical activities, and alcohol and smoking inhibition as well as medication adherence to blood pressure.

**Table 1: Distribution of Lifestyle Modifications among Participants (n=110):**

| Lifestyle Modification | Number of Participants | Percentage (%) |
|---|---|---|
| Reduced salt intake | 81 | 73.6% |
| Increased physical activity | 65 | 59.1% |
| Weight loss achieved | 48 | 43.6% |
| Smoking cessation (among smokers) | 22 out of 29 | 75.9% |
| Alcohol cessation (among drinkers) | 14 out of 18 | 77.8% |
| Regular medication adherence | 89 | 80.9% |

This table gave the distribution of the different lifestyle changes that were undertaken by the participants. The fact that a large percentage of patients (73.6%) decreased the consumption of salt, one of the important measures in dietary management of hypertension testifies to the effectiveness of this intervention. Approximately 59.1 percent of patients had reported improvement in physical activity most of them reported having done daily walks or moderate exercises. It is worthy to note that 43.6 percent of the patients noted successful weight loss in the study period reflecting the effects of dietary and physical activity interventions.

Of the 29 smokers at baseline, 22 (75.9%) were successful in quitting smoking and 14 out of the 18 (77.8%), alcohol. Most patients (80.9%) were compliant to the antihypertensive medication given to them. These results indicated that numerous patients made several lifestyle changes and coupled them with pharmacological treatment in a high percentage.

**Table 2: Blood Pressure Control in Relation to Lifestyle Modifications:**

| Lifestyle Adherence Level | Controlled BP (SBP <140 and DBP <90 mmHg) | Uncontrolled BP | Total Participants |
|---|---|---|---|
| High (≥4 modifications) | 41 (85.4%) | 7 (14.6%) | 48 |
| Moderate (2-3 modifications) | 33 (64.7%) | 18 (35.3%) | 51 |
| Low (0-1 modification) | 3 (18.8%) | 13 (81.2%) | 16 |

This table grouped the participants into the levels of adherence and recall the number of lifestyle change they applied and their respective blood pressure control status. Of the 23 individuals that made four or more lifestyle changes (in the High adherence group), 85.4 percent managed to reach the controlled status of blood pressure. Conversely, the success rate of lifestyle adherents that made two to three lifestyle changes was lower at 64.7 percent to attain target BP control. Poor results were experienced by those who had little or no lifestyle changes (Low adherence group) and only 18.8% had controlled blood pressure. This outcome had a last word of a positive correlation between the amount of lifestyle changes and effective goal of hypertension treatment. It supported the notion that in order to obtain the best results in terms of controlling blood pressure, a complex strategy based on dietary adjustments, physical activity, quitting bad habits, and taking medications was of utmost importance.

**DISCUSSION:**

Our current research is an evaluation of the factors of lifestyle changes on the treatment of hypertension in patients treated in Sheikh Zayed hospital Rahim yar Khan. The conclusion drawn in this research was that lifestyle interventions showed a lot of impact in the control and lowering of high blood pressure levels among hypertensive patients. The findings conformed with evidence available in literature, which mainly focused on highlighting the relevance of non-pharmacological treatment methods, including dietary changes, physical exercises, use of weight control, low salt diets, and to abstain smoking in

advancing the management of hypertension [8].

Most of those participants who embraced the proposed lifestyle change process recorded significant changes in the systolic and the diastolic levels of blood pressure. Moderate aerobic exercise, i.e., walking or jogging, was associated with better cardiovascular health and there seems to be an important connection between such activities and betters cardiovascular health. The patients with the sedentary lifestyles were not below in the level of blood pressure control as compared to the individuals with 30minutes or more of expansive exercises at the very least 5 days every week [9]. These observations have been in line with the findings of the earlier research which mentioned that physical activity used regularly contributed to enhancing the vascular endothelial similar to decreasing the systemic vascular resistance.

Changes in diets were also paramount in the attained results. Individuals with a healthier diet or rather a diet that is low in salt, consists of a lot of fruits, vegetables, and low-fat dairy food substances reported better blood pressure management [10]. An adoption of the DASH (Dietary Approaches to Stop Hypertension) diet among some of the participants helped in bringing down both the systolic and diastolic pressure greatly. Moreover, the restriction of consumption of saturated fats, and the consumption of food containing potassium resulted in positively affecting the cardiovascular health.

Another criterion that was found to be critical was weight management. Individuals who had managed to make a modest decrease in body weight in relation to overweight and obese persons registered a similar decrease in blood pressure [11]. Hypertension management was also beneficially affected by the reduction in body weight with just 5 and 10 percent of the original weight being lost. This cross-sectional relationship between weight loss and blood pressure improvement has been clearly reported in many clinical trials and justified the idea that obesity was a changeable risk factor to hypertension.

It was also noted in the study that it was important to minimize the use of alcohol and do away with tobacco consumption. Individuals that had not smoked and had consumed minimal alcohol levels revealed that they had followed better guidelines of dealing with high blood pressure, and their blood pressure levels had improved [12]. The behavioral alterations came along with better arterial elasticity and reduced activity of the sympathetic nervous system which also helped in maintenance of blood pressure.

Education of patients and regular guidance by the frontline workers were also discovered to play a central role in facilitating compliance to lifestyle changes. The individuals who were provided with continuous advice as to the necessity of lifestyle intervention showed higher adherence rates and indicated their positive results in terms of blood pressure status more frequently [13]. This observation justified the necessity of involving the patient-centered education into daily clinical practice.

In spite of such promising results, this research was impeded by some limitations. There was a possibility of reporting bias since data points on lifestyle changes were self-reported. In addition, adherence and outcomes were restricted to assess the long-term adherence and outcomes with a short follow-up. The study, however, generated considerable insights into the beneficial nature of lifestyle changes used in treatment of hypertension and the need to integrate these approaches to the general treatment guidelines [14].

To sum up, the evaluation indicated that when lifestyle changes were adopted and applied regularly, there was an enhanced outcome of hypertension. These results confirmed the notion that non-pharmacological activity ought to be viewed as a principle in the treatment of hypertension, together with pharmacotherapy, in order to achieve and maintain control of blood pressure [15].

**CONCLUSION:**

The review of lifestyle changes in the treatment of hypertension had brought noticeable impacts on the regulation of the blood pressure levels in the targeted population. It is found out in this study that the interventions in forms of dietary changes, physical activity, weight loss, sodium restriction and alleviation of stress had favourable effect on the results of blood pressure. Those who religiously applied these

lifestyle interventions significantly improved in their systolic and diastolic readings and therefore, it was apparent that non-pharmacological interventions were useful in lowering or maintaining blood pressure. Also, patient education and follow-ups have contributed to the significant role of maintaining the behavior changes. The results contributed to the idea that lifestyle change, when applied effectively and tracked, acted as a crucial part of the management of hypertension and could have allowed lowering the medication intake. In general, the study made it clear that lifestyle counseling could be a valuable addition to the normal practices in the fields of healthcare provision, and health care practitioners should focus more on preventive measures in caring about hypertension patients to establish a sustainable positive impact on cardiovascular wellbeing.

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