

Stress Management Strategies for Optimal Hypertension Control: A Comprehensive Review

Nishindra Kinjalk¹, Tushar Kinjalk², Aarushi Kinjalk³, Meghna Kinjalk⁴

¹Associate Professor, Department of Medicine, Narayan Medical College, Sasaram

²Junior Resident, Department of Surgery, DY Patil Medical College, Nerul, Navi Mumbai

³Specialist in Dermatology, Pune

⁴Director, Kinjalk Diabetes & Heart Care Centre, Muzaffarpur

Abstract: *This article delves into the pivotal role of stress management in controlling hypertension, a global health concern affecting over 1.28 billion individuals according to recent WHO reports. The intricate relationship between chronic stress and hypertension development is explored, shedding light on the physiological mechanisms involving the sympathetic nervous system and the hypothalamic - pituitary - adrenal axis. The article examines stress management interventions, including relaxation techniques, mindfulness practices, and cognitive - behavioural therapy, which have exhibited promise in reducing stress levels and positively impacting hypertension control. Highlighting the barriers that stress poses to therapy compliance, dietary habits, and physical activities, the article underscores the importance of stress management in achieving optimal hypertension management. The article concludes by emphasizing the need to integrate evidence - based stress management programs into hypertension care, tailored to the unique needs of individuals, ultimately enhancing treatment adherence, emotional well - being, and overall health outcomes.*

Keywords: Hypertension, Stress, Stress management

1. Introduction

High peripheral arterial blood pressure, commonly called hypertension, is a prevalent cardiovascular condition worldwide. [1, 2, 3] In a WHO report of March 2023, it stated that there were 1.28 billion cases of hypertension globally. Majority of these cases are in the low - and middle - income countries. What makes the scenario grim is the fact that 46 percent of hypertension cases are unaware of the illness. And of these, less than half can reach to a clinic to take treatment. Among those, who take treatment, only 21 percent hypertension cases have their blood pressure under control. Since uncontrolled hypertension is a major cause of premature death worldwide, WHO has taken up a daunting task of decreasing the prevalence of hypertension by 33 percent by 2030.

As a common practice systolic blood pressure (SBP) more than 140 mm of mercury and diastolic blood pressure (DBP) more than 90 mm of mercury is labelled as hypertension. However, in cases of diabetes mellitus, chronic kidney diseases (CKD), high risk cases for cardiovascular diseases the goal of BP is kept below 130/80.

Increased urbanisation and its antecedent challenges have brought stress levels to a much higher level, not only to the young but to the people from all age and sex groups. This stress has multifactorial genesis, and hence, needs multipronged management strategies also. [4, 5, 6, 7]

Acute stress is not that detrimental in genesis of high blood pressure. It is the chronic stress that has been linked to elevated blood pressure. Stress has emerged as a prominent modifiable risk factor [8, 9, 10, 11]

This article explores the role of stress management in hypertension control. By examining the relevant literature, this article aims to provide insights into the impact of stress on blood pressure, the methodologies used to assess this relationship, observations from relevant studies, and a discussion of the implications for clinical practice [12, 13, 14, 15]

2. Methodology

A comprehensive review of literature on this subject was taken up. By a systematic analysis of the existing and relevant literature, the important observations and inferences were made. PubMed, Web of Science and Google Scholar were specially looked for the medical databases. Observational studies as well as the clinical trials were also included in this analysis.

3. Observation

The literature analysed revealed a consistent relationship between chronic stress and elevated blood pressure. Exposure to prolonged stress, whether related to work, finances, personal life, or environmental factors, demonstrated higher systolic and diastolic blood pressure readings; as compared to their non - stressed counterparts.

A genetic predisposition was also found to be of importance. Unhealthy lifestyle, increased intake of salt, alcohol and tobacco added to the problem. Sedentary lifestyle and avoidance of regular physical exercise also were found to be factors of concern, in the etiopathogenesis of hypertension [16, 17, 18, 19, 20]

Stress levels assessment scores:

The techniques to assess stress levels have been useful while trying to manage stress. These are Holmes and Rahe Stress

Volume 12 Issue 8, August 2023

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

Scale developed in 1967, also called the social readjustment rating scale (SRSS) is a good scale to assess the chronic stress levels. Good control of stress is when the score is 150 or less, moderate stress is between the score of 151 to 300, and severe moribund stress is when the score is 301 or more. [21]

Hassles and Uplifts Scale (HUS) designed in 1982, is another method to assess the stress. This scale is more important in analysing the levels of acute stress. It is a 53 - item questionnaire asking the respondents to evaluate the positive and negative experiences in everyday life. [22]

Perceived Stress Scale (PSS). Developed in 1983, this stress assessment instrument is a more precise measure how the personal stress can be determined. Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress. Scores ranging from 0 - 13 is considered low stress, 14 - 26 considered moderate stress, 27 - 40 considered high perceived stress. [23, 24, 25]

Several stress management techniques:

These were also explored in the reviewed literature, including lifestyle modifications, relaxation exercises, mindfulness - based stress management techniques, and cognitive - behavioural therapy (CBT). Clinical trials assessing the efficacy of these interventions consistently reported reductions in blood pressure among participants who engaged in stress management programs. Notably, the magnitude of blood pressure reduction varied, with more significant decreases observed in individuals who religiously adhered to the stress management practices. [26,27, 28, 29, 30]

4. Discussion

The findings from this review underscore the importance of integrating stress management into hypertension control strategies. Chronic stress contributes to the pathogenesis of hypertension through multiple physiological mechanisms, including the activation of the sympathetic nervous system and the release of stress hormones like cortisol. Stress management techniques target these mechanisms, promoting relaxation, reducing sympathetic activity, and improving overall psychological well - being.

Moreover, stress management aligns with a patient - centred approach to hypertension management. It empowers individuals to take an active role in their health by providing them with practical tools to mitigate stress and reduce blood pressure. By tailoring stress management interventions to individual preferences and needs, healthcare providers can enhance treatment adherence and long - term outcomes.

5. Conclusion

Chronic stress is a significant modifiable risk factor for hypertension. Stress management techniques have demonstrated efficacy in reducing blood pressure levels significantly. One must consider stress assessment as part of routine hypertension management strategy, and incorporate stress management strategies into the treatment plans.

References

- [1] Bromfield S, Muntner P. High blood pressure: the leading global burden of disease risk factor and the need for worldwide prevention programs. *Current hypertension reports*.2013 Jun 1; 15 (3): 134 - 6.
- [2] Lewington S, Lacey B, Clarke R, Guo Y, Kong XL, Yang L, et al. The Burden of Hypertension and Associated Risk for Cardiovascular Mortality in China. *JAMA Intern Med*.2016; 176 (4): 524 - 32.
- [3] Ettehad D, Emdin CA, Kiran A, Anderson SG, Callender T, Emberson J, Chalmers J, Rodgers A, Rahimi K. Blood pressure lowering for prevention of cardiovascular disease and death: a systematic review and meta - analysis. *Lancet*. 2016; 387 (10022): 957 - 67.
- [4] Mills KT, Bundy JD, Kelly TN, Reed JE, Kearney PM, Reynolds K, Chen J, He J. Global disparities of hypertension prevalence and control. *Circulation*.2016 Aug 9; 134 (6): 441 - 50.
- [5] Lu J, Lu Y, Wang X, Li X, Linderman GC, Wu C, Cheng X, Mu L, Zhang H, Liu J, Su M. Prevalence, awareness, treatment, and control of hypertension in China: data from 1· 7 million adults in a population - based screening study (China PEACE Million Persons Project). *The Lancet*.2017 Dec 9; 390 (10112): 2549 - 58.
- [6] Chobanian, A. V., &Bakris, G. L. (2003). The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure: the JNC 7 report. *JAMA*, 289 (19), 2560 - 2572.
- [7] Prince MJ, Ebrahim S, Acosta D, Ferri CP, Guerra M, Huang Y, et al. Hypertension prevalence, awareness, treatment and control among older people in Latin America, India and China: a 10/66 cross - sectional populationbased survey. *J Hypertens*.2012; 30 (1): 177 - 87.
- [8] Cohen, S., Janicki - Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *JAMA*, 298 (14), 1685 - 1687.
- [9] Rosengren, A., Hawken, S., Ounpuu, S., Sliwa, K., Zubaid, M., Almahmeed, W. A., . . . & Yusuf, S. (2004). Association of psychosocial risk factors with risk of acute myocardial infarction in 11119 cases and 13648 controls from 52 countries (the INTERHEART study): case - control study. *The Lancet*, 364 (9438), 953 - 962.
- [10] Schneider, R. H., Grim, C. E., Rainforth, M. V., Kotchen, T., Nidich, S. I., Gaylord - King, C., . . . & Alexander, C. N. (2005). Stress reduction in the secondary prevention of cardiovascular disease: randomized, controlled trial of transcendental meditation and health education in Blacks. *Circulation: Cardiovascular Quality and Outcomes*, 3 (6), 632 - 640.
- [11] Jha, A. P., Krompinger, J., &Baime, M. J. (2007). Mindfulness training modifies subsystems of attention. *Cognitive, Affective, &Behavioral Neuroscience*, 7 (2), 109 - 119.
- [12] Davidson, R. J., Kabat - Zinn, J., Schumacher, J., Rosenkranz, M., Muller, D., Santorelli, S. F., . . . & Sheridan, J. F. (2003). Alterations in brain and immune

- function produced by mindfulness meditation. *Psychosomatic Medicine*, 65 (4), 564 - 570.
- [13] Hofmann, S. G., Asnaani, A., Vonk, I. J., Sawyer, A. T., & Fang, A. (2012). The Efficacy of Cognitive Behavioral Therapy: A Review of Meta - analyses. *Cognitive Therapy and Research*, 36 (5), 427 - 440.
- [14] Kabat - Zinn, J., Lipworth, L., & Burney, R. (1985). The clinical use of mindfulness meditation for the self - regulation of chronic pain. *Journal of Behavioral Medicine*, 8 (2), 163 - 190.
- [15] Lachman, S., Boekaerts, M., & Rietzschel, E. (2010). The impact of continuous and intermittent stress on active and passive behavioral flexibility. *Learning and Individual Differences*, 20 (3), 316 - 322.
- [16] Frieden TR, King SM, Wright JS. Protocol - based treatment of hypertension: a critical step on the pathway to progress. *JAMA*.2014; 311 (1): 21 - 2.
- [17] Campbell NR, Sheldon T. The Canadian effort to prevent and control hypertension: can other countries adopt Canadian strategies?. *Current opinion in cardiology*. 2010 Jul 1; 25 (4): 366 - 72.
- [18] Oliveria SA, Lapuerta P, McCarthy BD, L'Italien GJ, Berlowitz DR, Asch SM. Physician - related barriers to the effective management of uncontrolled hypertension. *Archives of internal medicine*.2002; 162 (4): 413 - 20.
- [19] Carter BL, Bosworth HB, Green BB. The hypertension team: the role of the pharmacist, nurse, and teamwork in hypertension therapy. *The Journal of Clinical Hypertension*.2012 Jan 1; 14 (1): 51 - 65.
- [20] Campbell NR, McAlister FA, Quan H. Hypertension Outcomes Research Task Force. Monitoring and evaluating efforts to control hypertension in Canada: why, how, and what it tells us needs to be done about current care gaps. *Can J Cardiol*. 2013; 29 (5): 564 - 70.
- [21] Holmes, T. H. and Rahe, R. H. 'The Social Readjustment Rating Scale,' *Journal of Psychosomatic Research*.1967: 11 (2), 13 - 218.
- [22] Udayar, S., Urbanaviciute, I., Morselli, D., Bollmann, G., Rossier, J., & Spini, D. (2023). The LIVES Daily Hassles Scale and Its Relation to Life Satisfaction. *Assessment*, 30 (2), 348 - 363.
- [23] Andreou, E., Alexopoulos, E. C., Lionis, C., Varvogli, L., Gnardellis, C., Chrousos, G. P., & Darviri, C. (2011). Perceived stress scale: reliability and validity study in Greece. *International journal of environmental research and public health*, 8 (8), 3287 - 3298.
- [24] Baik, S. H., Fox, R. S., Mills, S. D., Roesch, S. C., Sadler, G. R., Klonoff, E. A., & Malcarne, V. L. (2019). Reliability and validity of the Perceived Stress Scale - 10 in Hispanic Americans with English or Spanish language preference. *Journal of health psychology*, 24 (5), 628 - 639.
- [25] Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24 (4), 385-396.
- [26] Krause T, Lovibond K, Caulfield M, McCormack T, Williams B. Management of hypertension: summary of NICE guidance. *BMJ (Clin Res Ed)*.2011; 343: d4891.
- [27] Williams B, Poulter NR, Brown MJ, Davis M, McInnes GT, Potter JF, et al. British Hypertension Society guidelines for hypertension management 2004 (BHS - IV): summary. *BMJ (Clin Res Ed)*.2004; 328 (7440): 634 - 40.
- [28] Whitworth JA.2003 World Health Organization (WHO) /International Society of Hypertension (ISH) statement on management of hypertension. *J Hypertens*. 2003; 21 (11): 1983 - 92.
- [29] James PA, Oparil S, Carter BL, Cushman WC, Dennison - Himmelfarb C, Handler J, et al. 2014 evidence - based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). *JAMA*.2014; 311 (5): 507 - 20.
- [30] Kovell LC, Ahmed HM, Misra S, Whelton SP, Prokopowicz GP, Blumenthal RS, McEvoy JW. US hypertension management guidelines: a review of the recent past and recommendations for the future. *Journal of the American Heart Association*.2015 Dec 22; 4 (12): e002315.