
WHITE-COAT HYPERTENSION: WAYS OF OPTIMIZING THE PROVISION OF MEDICAL AID (literature review)

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<https://doi.org/10.35339/ic.11.1.lzf>

ABSTRACT

Background. White-coat hypertension is a controversial issue of a modern cardiovascular medicine. It is a common condition in clinical practice, in which office blood pressure is elevated while out-of-office measurements (ambulatory or home) are normal.

The aim of this review is to address a number of issues related to white-coat hypertension, in particular, its definition, prevalence, etiology, symptoms, and consequences, emphasizing the need to improve diagnosis, management and prognosis of this disease.

Results. Recent studies demonstrate that white-coat hypertension is associated with cardiovascular risk factors, including the progression to sustained hypertension and the development of target organ damage. Timely and accurate diagnosis of white-coat hypertension is incredibly important as it allows postponing its conversion to sustained hypertension and prevents alterations of target organ structure and function. The need for improved patient-doctor interaction to enhance diagnosis and management of white-coat hypertension cannot be overstated. Other measures include exploring standardized measurements, improving communication and relationship establishing between physicians and patients, as well as investigating innovative interventions such as health education and telemedicine. The importance of the understanding of the emotional components contributing to white-coat hypertension are highlighted and strategies to improve patient outcomes through early diagnosis, reduced anxiety, and optimal healthcare experiences are proposed.

Conclusion. A comprehensive approach, encompassing standardized measurements, improved communication, and innovative interventions, is essential for effectively managing white coat hypertension.

Keywords: *blood pressure, cardiovascular risk, communication, healthcare, anxiety.*

Introduction

White-coat hypertension, also known as the "white-coat effect" or "white-coat syndrome", refers to the phenomenon where individuals exhibit elevated blood pressure readings specifically in a medical setting, despite having normal blood pressure in their daily lives. White-coat hypertension occurs in 15–30% of individuals with an elevated office blood pressure, and this condition is quite reproducible [1]. In the early 2000s, Thomas Pickering introduced the term "white-coat hypertension" to describe individuals not undergoing hy-

pertension treatment, yet exhibiting elevated office blood pressure alongside normal daytime blood pressure recorded through ambulatory blood pressure monitoring. The condition is characterized by office measurements of 140/90 mmHg or higher, while ambulatory or home readings are normal [2]. Discrepancies in diagnostic criteria, as highlighted by different guidelines, contribute to challenges in accurate identification and management of white-coat hypertension. The consequences of misdiagnosis include the unwarranted use of antihypertensive medications, emphasizing the importance of standardized measurements. A balanced approach to diagnosis and treatment of white-coat hypertension is becoming increasingly important due to recent findings, which suggest that untreated white-coat hypertension is associated with an increased risk of cardiovascular events and cardiovascular mortality compared with normotensive patients [3].

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The aim of this review is to improve the understanding of white coat hypertension, focusing on accurate diagnosis and effective management. This will be done by considering recent scientific publications and accomplishments of international scientists published during the last decades.

Results and Discussion

White coat hypertension, first identified by Riva-Rocci in 1896, involves an immediate increase in blood pressure during a visit to the doctor. A follow-up study in 1983 using intra-arterial blood pressure monitoring confirmed that the increase in blood pressure and heart rate persisted throughout the visit. Microneurographic studies indicate an emotional "protective reaction" during communication with a doctor, which contributes to the emergence of "white coat" hypertension. Patients predisposed to this condition often report a negative medical experience in the past that leads to situational anxiety. Anticipation of high blood pressure readings and the peculiarities of perception of hypertension, whether accurate or not, may increase anxiety by influencing blood pressure responses during a visit to the doctor. Metabolic syndrome has also been linked to white coat hypertension, with associated risks for cardiovascular disease and diabetes. However, the limitations of anxiety measurement methods in previous studies require further research for a comprehensive understanding of this phenomenon [4].

Different measurements in medical offices and at home can lead to the fact that doctors mistakenly diagnose patients as hypertensive. The prevalence of white coat hypertension varies across studies due to different cut-offs for normal out-of-office blood pressure readings. While the 2013 European guidelines report a 13% prevalence, recent reviews suggest 30–40% of patients diagnosed with hypertension based on office measurements alone have normal out-of-office blood pressure [5; 6]. Ambulatory monitoring is crucial for accurate diagnosis, the suggested intervals for confirmation and ongoing monitoring should be maintained. Additionally, resistant hypertensive patients may present with white-coat hypertension, emphasizing the importance of cautious medical decisions based on comprehensive evaluations rather than isolated office readings.

Certain studies indicate that females, individuals over 50, and nonsmokers are more prone to white coat hypertension [7; 8]. However, some studies suggest that a patient's gender, if not influenced by variables such as stress, does not essentially determine the likelihood of developing whi-

te-coat hypertension. High levels of stress in women are more closely associated with white-coat hypertension than in men, which may be related to different responses to stress during clinic visits. The diagnosis of white coat hypertension tends to rise significantly with age, possibly attributed to age-related arterial stiffness. In addition, patients with white coat hypertension often exhibit lower office systolic blood pressure measurements [9].

Solving the problem of "white-coat" hypertension involves building a therapeutic relationship between physicians and patients. Effective communication, empathy, and trust can reduce patient anxiety during medical visits, potentially impacting white-coat hypertension. Physician-patient communication encompasses instrumental exchange (medical tasks) and affective communication (building a therapeutic relationship) [10; 11]. Nonverbal cues, such as warm demeanor and active listening, contribute significantly to patient outcomes. Empathy, involving understanding and reflecting patient feelings, is linked to improved patient adherence and satisfaction. Physician empathy can be enhanced through communication skills training. Trust, established through caring communication and shared decision-making, is crucial in reducing patient anxiety. Sufficient time during office visits is essential for addressing patient concerns, understanding perspectives, and fostering a positive physician-patient relationship.

The literature extensively addresses enhancing communication between medical providers and patients through training programs and courses [12]. Medical schools, residency programs, and advanced training courses are increasingly incorporating communication and interpersonal skills into their curricula. However, the effectiveness of such training remains somewhat limited, with improvements needed in methodological approaches for assessing the impact on health outcomes. Considering the emotional components of white-coat hypertension, studies focusing on emotional outcomes show promising results. Physician training programs that address patients' emotional concerns lead to reduced emotional distress, highlighting the potential impact on conditions like white-coat hypertension. Patient-focused training programs, encouraging participation through question asking or coaching before medical visits, proved to be beneficial [13]. Patients who prepare questions and receive information before visits report lower anxiety levels, suggesting a positive impact on overall well-being and treatment adherence.

Exploring future techniques to enhance the provider-patient relationship and reduce patient anxiety, interventions focusing on information provision and stress reduction before office visits have been considered. Past approaches involved waiting room interventions using health educators to improve communication about pain and increase patient-initiated communication, potentially reducing stress [14]. Telemedicine, including methods like email communication and video visits, presents an alternative to traditional communication, with evidence suggesting that patient-centered care and satisfaction can be maintained. In hypertension care, telemedicine has shown promise in improving accurate diagnoses, early intervention, medication adherence, blood pressure control, and overall health outcomes. While not specifically studied in patients with white coat hypertension, these findings could have positive implications for this group, potentially leading to improved health outcomes and reduced healthcare costs [15].

Conclusion

In conclusion, white-coat hypertension presents challenges in accurate diagnosis and management. Varying measurement criteria, emotional factors, and discrepancies in guidelines contribute to its complexity. Addressing this condition requires improved communication and rela-

tionship-building between physicians and patients. Training programs focusing on communication skills, empathy, and trust can mitigate patient anxiety. Nonverbal cues, patient-focused interventions, and potential telemedicine applications show promise. A comprehensive approach, encompassing standardized measurements, improved communication, and innovative interventions, is essential for effectively managing white coat hypertension. Understanding emotional components and exploring technological advancements can lead to more accurate diagnoses and better patient outcomes.

DECLARATIONS:

Disclosure Statement

The authors have no potential conflicts of interest to disclosure, including specific financial interests, relationships, and/or affiliations relevant to the subject matter or materials included.

Data Transparency

The data can be requested from the authors.

Statement of Ethics

The authors have no ethical conflicts to disclose.

Funding Sources

There are no external sources of funding.

Consent for publication

All authors give their consent to publication.

References

1. Nuredini G, Saunders A, Rajkumar C, Okorie M. Current status of white coat hypertension: where are we? *Ther Adv Cardiovasc Dis.* 2020;14:1753944720931637. DOI: 10.1177/1753944720931637. PMID: 32580646.
2. Franklin S, Lutgarde T, Hansen T, O'Brien E, Staessen J. White-Coat Hypertension. *Hypertension.* 2013; 62:982-7. DOI: 10.1161/HYPERTENSIONAHA.113.01275. PMID: 24041952.
3. Mancia G, Faccetti R, Bombelli M. White-coat hypertension: pathophysiological and clinical aspects: excellence award for hypertension research 2020. *Hypertension.* 2021;78:1677-8. PMID: 34757765. DOI: 10.1161/HYPERTENSIONAHA.121.16489.
4. Spruill T, Pickering T, Schwartz J, Mostofsky E, Ogedegbe G, Clemow L, Gerin W. The impact of perceived hypertension status on anxiety and the white coat effect. *Ann Behav Med.* 2007;34(1):1-9. DOI: 10.1007/BF02879915. PMID: 17688391.
5. Pickering TG, Hall JE, Appel LJ, Falkner BE, Graves J, Hill MN, et al. Recommendations for blood pressure measurement in humans and experimental animals: part 1: blood pressure measurement in humans: a statement for professionals from the Subcommittee of Professional and Public Education of the American Heart Association Council on High Blood Pressure Research. *Circulation.* 2005;111(5):697-716. DOI: 10.1161/01.CIR.0000154900.76284.F6. PMID: 15699287.
6. Myers MG, Valdivieso MA. Use of an automated blood pressure recording device, the BpTRU, to reduce the "white coat effect" in routine practice. *Am J Hypertens.* 2003;16(6):494-7. DOI: 10.1016/s0895-7061(03)00058-x. PMID: 12799100.
7. Dolan E, Stanton A, Atkins N, Den Hond E, Thijs L, McCormack P, et al. Determinants of white-coat hypertension. *Blood Press Monit.* 2004;9(6):307-9. DOI: 10.1097/00126097-200412000-00007. PMID: 15564985.

8. Fisher M, Blackwell J, Saseen J. What is the best way to identify patients with white-coat hypertension? *J Fam Pract.* 2005;54(6):549-50. PMID: 15939009.
9. Verdecchia P, Palatini P, Schillaci G, Mormino P, Porcellati C, Pessina AC. Independent predictors of isolated clinic ("white-coat") hypertension. *J Hypertens.* 2001;19(6):1015-20. DOI: 10.1097/00004872-200106000-00004. PMID: 11403348.
10. Ong LM, de Haes JC, Hoos AM, Lammes FB. Doctor-patient communication: a review of the literature. *Soc Sci Med.* 1995;40(7):903-18. DOI: 10.1016/0277-9536(94)00155-m. PMID: 7792630.
11. Bensing JM, Dronkers J. Instrumental and affective aspects of physician behavior. *Med Care.* 1992;30(4):283-98. DOI: 10.1097/00005650-199204000-00001. PMID: 1556878.
12. Rao J, Anderson L, Inui T, Frankel R. Communication interventions make a difference in conversations between physicians and patients: a systematic review of the evidence. *Med Care.* 2007;45(4):340-9. DOI: 10.1097/01.mlr.0000254516.04961.d5. PMID: 17496718.
13. Harrington J, Noble L, Newman S. Improving patients' communication with doctors: a systematic review of intervention studies. *Patient Educ Couns.* 2004;52(1):7-16. DOI: 10.1016/s0738-3991(03)00017-x. PMID: 14729285.
14. Street R, Slee C, Kalauokalani D, Dean D, Tancredi D, Kravitz R. Improving physician-patient communication about cancer pain with a tailored education-coaching intervention. *Patient Educ Couns.* 2010;80(1):42-7. DOI: 10.1016/j.pec.2009.10.009. PMID: 19962845.
15. Friedman R, Kazis L, Jette A. A telecommunications system for monitoring and counseling patients with hypertension. Impact on medication adherence and blood pressure control. *Am J Hypertens.* 1996;9(4_Pt_1):285-92. DOI: 10.1016/0895-7061(95)00353-3. PMID: 8722429.

Received: 14 Mar 2024

Accepted: 31 Mar 2024

Cite in Vancouver style as: Letik IV, Zhuravlyova LV, Filonenko MV, Klimashevskaya VO. White-coat hypertension: ways of optimizing the provision of medical aid (literature review). *Inter Collegas.* 2024;11(1):4p. In press. <https://doi.org/10.35339/ic.11.1.lzf>

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