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Clinical Identification and Management of Hypertension in a Primary Care Setting at Segala Mider Public Health Center

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Abstract

Hypertension remains a major global health challenge and a leading contributor to cardiovascular morbidity and mortality. Its asymptomatic nature causes many individuals to remain undiagnosed, increasing the risk of severe complications such as stroke, coronary artery disease, and renal impairment. Despite advancements in diagnostic and therapeutic approaches, hypertension awareness and treatment adherence remain low, particularly in primary care settings where early detection is crucial. This study describes the clinical identification and management process of a hypertensive adult patient at Segala Mider Public Health Center as an illustration of the essential role of primary healthcare services in improving hypertension control at the community level. Clinical data were collected through patient interviews, vital sign assessment, physical examination, and review of medical records. The patient, a 42-year-old male, presented with recurrent dizziness triggered by physical activity and consumption of sweet foods. Initial evaluation showed severely elevated blood pressure at 164/122 mmHg with otherwise normal cardiopulmonary findings. The patient had previously been taking amlodipine 5 mg daily with suboptimal response. Management involved titration of amlodipine to 10 mg daily for 15 days, accompanied by short-term furosemide therapy and vitamin B complex supplementation. The intervention produced symptomatic improvement and facilitated better blood pressure control during follow-up. The findings highlight the importance of timely recognition of uncontrolled hypertension, appropriate pharmacological adjustment, and continuous monitoring. This report emphasizes the relevance of primary care in initiating evidence-based treatment, identifying modifiable risk factors, and ensuring patient education regarding lifestyle modification. The novelty of this study lies in demonstrating how structured evaluation and treatment optimization in a resource-limited primary care setting can effectively support hypertension control while preventing long-term complications, reinforcing the vital role of frontline healthcare facilities in managing chronic diseases.

1. Introduction

Hypertension is widely recognized as one of the most prevalent non-communicable diseases affecting adults worldwide, characterized by persistently elevated arterial blood pressure that contributes significantly to global morbidity and mortality (World Health Organization, 2021). As a chronic condition, hypertension serves as a major risk factor for a broad spectrum of cardiovascular diseases, including stroke, myocardial infarction, heart failure, and peripheral vascular disorders, all of which impose substantial burdens on healthcare systems, particularly within low- and middle-income countries (Mills et al., 2020).

The World Health Organization reports that hypertension accounts for millions of deaths each year and remains one of the leading causes of premature mortality globally. Current estimates suggest that hypertension contributes to approximately 13% of all global deaths, reflecting its continued status as a critical public health concern (WHO, 2021). The global prevalence of hypertension stands at around 22%, though significant geographic disparities exist. The African region consistently demonstrates the highest burden, with prevalence rates surpassing 27% among adults (Zhou et al., 2021).

Despite the well-established health risks, awareness levels, treatment initiation, and long-term adherence among hypertensive patients remain suboptimal in many regions. This has led to widespread underdiagnosis and inadequate control of blood pressure, perpetuating preventable complications (Lu et al., 2022). The rising rate of uncontrolled hypertension has been closely associated with lifestyle transitions driven by urbanization, including increased consumption of high-sodium processed foods, reduced physical activity, and elevated exposure to psychological stress (Mills et al., 2020).

In Indonesia, hypertension continues to present a substantial public health challenge. Data from the 2023 Indonesian Health Survey indicate a modest decline in prevalence—from 34.1% in 2018 to 30.8% in 2023 yet hypertension remains one of the most commonly diagnosed conditions among adults (Kementerian Kesehatan RI, 2023). Notably, a considerable discrepancy persists between hypertension diagnosed by health professionals and hypertension identified through direct blood pressure measurements, suggesting ongoing gaps in awareness, routine screening, and community-level health literacy.

Multiple risk factors contribute to the increasing prevalence of hypertension in Indonesia, including age progression, genetic predisposition, unhealthy dietary patterns, tobacco use, sedentary behaviors, and chronic stress (Wahidin et al., 2025). Modifiable lifestyle components—such as excessive sodium consumption, obesity, and physical inactivity represent particularly important targets for preventive interventions within community and primary healthcare settings (Lamangida et al., 2025).

Given that hypertension often progresses silently without clear symptoms, many individuals remain unaware of their condition until advanced complications arise. This lack of early recognition increases the likelihood of cardiovascular and renal damage, underscoring the necessity of proactive detection strategies (Sudirman & Monoarfa, 2022). Early identification of elevated blood pressure is essential for preventing long-term organ damage, and routine screening within primary care facilities remains one of the most effective strategies to achieve timely diagnosis and intervention (Ayuning Siwi, 2024).

Primary healthcare centers function as the front line in hypertension management, particularly in resource-limited settings. Their role extends beyond clinical diagnosis to include health promotion, lifestyle counseling, and structured long-term monitoring all of which are critical to improving overall population health outcomes (Whelton et al., 2018). Pharmacological therapy combined with lifestyle modification has consistently demonstrated effectiveness in achieving recommended blood pressure targets; however, adherence to clinical guidelines and continuity of care remain persistent challenges (Kandarini, 2013).

Given these gaps, documentation of clinical identification and management practices within primary care settings is crucial. Therefore, this study aims to describe the clinical identification and management of hypertension at the Segala Mider Public Health Center, highlighting real-world practices in primary care. The study further aims to strengthen understanding of early detection, individualized treatment approaches, and patient education. It is expected that findings from this report will contribute to improved clinical strategies and support public health efforts in reducing the burden of hypertension in Indonesia.

2. Materials and Methods

This study employed a descriptive clinical reporting approach to document the identification, evaluation, and management of a patient diagnosed with hypertension at the Segala Mider Public Health Center. The methodological framework was designed to systematically capture all relevant clinical data to provide an accurate representation of the patient's condition and the care delivered in a primary healthcare setting.

Data collection consisted of direct patient interviews, comprehensive physical examinations, and a review of medical records maintained at the health center. Information obtained included demographic characteristics, presenting complaints, symptom chronology, lifestyle factors, family history of cardiovascular diseases, and previous antihypertensive treatments. Vital signs such as blood pressure, pulse rate, respiratory rate, and temperature were measured using standardized clinical equipment following national primary care protocols. Blood pressure measurements were performed using a calibrated sphygmomanometer, with the patient in a seated position after adequate rest to ensure accuracy. Measurements were repeated to confirm consistency.

Additional clinical assessments included a general physical examination focusing on cardiopulmonary status, neurological symptoms, and signs indicative of end-organ involvement. Although no advanced diagnostic procedures were performed due to limitations inherent to primary care services, the clinical evaluation adhered to established national and international guidelines for hypertension management. Treatment decisions were based on current evidence-based recommendations, encompassing both pharmacological therapy and lifestyle modification counseling. Prescribed medications, dosage adjustments, and follow-up plans were recorded in detail.

The patient's clinical progress was monitored during subsequent visits, and treatment outcomes were evaluated based on symptomatic improvement and changes in blood pressure readings. All information was documented using standardized clinical recording tools routinely utilized in the health center to ensure consistency and completeness of data. Ethical considerations were strictly observed throughout the study. Informed consent was obtained from the patient after providing a clear explanation of the purpose of data usage for academic publication. All identifying personal information was removed or anonymized to safeguard patient confidentiality in accordance with ethical guidelines and institutional policies.

3. Results and Discussion

The patient, a 42-year-old male, presented with intermittent dizziness accompanied by a known history of elevated blood pressure. His symptoms were aggravated by strenuous physical activity and intake of sugary foods, suggesting fluctuations in cardiovascular workload and possible metabolic triggers associated with insulin and sympathetic activation (Grassi et al., 2019; Hall et al., 2021). The improvement of symptoms with rest indicates exertion-induced hemodynamic surges, which are commonly observed in uncontrolled hypertension (Whelton et al., 2018).

On physical examination, his blood pressure measured 164/122 mmHg, a level categorized as a hypertensive crisis according to the ACC/AHA 2017 guidelines, although the absence of acute end-organ damage indicated hypertensive urgency rather than emergency (Whelton et al., 2017). Hypertensive urgency requires immediate but non-emergency adjustment of antihypertensive therapy and close follow-up rather than rapid intravenous treatment (Peixoto, 2019; Rodriguez et al., 2017). The patient had been using amlodipine 5 mg daily, but persistently elevated blood pressure indicated insufficient therapeutic control. This justified dose escalation to 10 mg daily, consistent with evidence that higher doses of calcium channel blockers (CCBs) are often required in younger or salt-sensitive patients (Bakris et al., 2020; Ettehad et al., 2016). Amlodipine, a dihydropyridine CCB, is recommended as a first-line agent in most major hypertension guidelines because of its strong evidence in reducing cardiovascular risk and its safety profile (ALLHAT Collaborative Research Group, 2002; Chrysant, 2017).

Short-term furosemide use was considered appropriate given suspected fluid retention, which may exacerbate intravascular volume and resistance (Sica, 2011). Additionally, vitamin B complex was provided to alleviate fatigue, a common complaint among hypertensive individuals that may relate to autonomic dysregulation or micronutrient insufficiency (Houston, 2018). Hypertension is a multifactorial condition involving complex interactions between genetics, diet, physical inactivity, and psychosocial stressors (Carretero & Oparil, 2000; Forouzanfar et al., 2017). In this case, lifestyle patterns specifically unhealthy dietary choices and inconsistent exercise likely contributed to poor blood pressure control. Excessive intake of processed or sugary foods can worsen metabolic syndrome, increase vascular stiffness, and elevate sympathetic activity (He et al., 2020; Mozaffarian, 2016).

Effective hypertension management integrates pharmacological therapy with evidence-based lifestyle modification strategies. International guidelines emphasize sodium reduction, regular aerobic physical activity, weight optimization, smoking cessation, and moderated alcohol intake to improve blood pressure control and reduce long-term cardiovascular risk (Unger et al., 2020; Padwal et al., 2019). For patients with stage 2 hypertension or hypertensive urgency, intensified therapy or combination treatment is often necessary to achieve adequate blood pressure targets, as demonstrated in trials such as SPRINT and HOPE (SPRINT Research Group, 2015; Yusuf et al., 2000).

Regular monitoring and medication adherence remain crucial because noncompliance accounts for a substantial proportion of treatment-resistant hypertension cases (Burnier & Egan, 2019). Primary care settings play a pivotal role in early detection, continuous monitoring, and therapeutic adjustment, especially in low-resource environments where most patients initially seek care (Ungar et al., 2021; Beaney et al., 2020). Overall, this case reinforces the importance of holistic, patient-centered hypertension management in primary care. Structured counseling, routine screening, and tailored pharmacotherapy adjustments are essential to preventing serious complications such as heart failure, stroke, coronary artery disease, and chronic kidney disease. Timely optimization of therapy and comprehensive patient education can significantly improve blood pressure outcomes and reduce the long-term burden of cardiovascular disease at the population level.

4. Conclusions

Hypertension remains a major global health issue due to its high prevalence, asymptomatic nature, and potential to cause life-threatening complications if not properly managed. This case report illustrates the importance of early detection, appropriate therapeutic intervention, and continuous monitoring in achieving optimal blood pressure control. The patient presented with significantly elevated blood pressure and symptoms of dizziness, underscoring the need for prompt assessment and tailored treatment adjustments. The management approach in this case included the titration of amlodipine to 10 mg daily, alongside short-term diuretic therapy and supportive supplementation. These pharmacological interventions were complemented with recommendations for lifestyle modification an essential component of hypertension management. Strategies such as reducing sodium intake, maintaining regular physical activity, limiting alcohol consumption, avoiding smoking, and managing stress are necessary to achieve sustained blood pressure improvement. To reach the recommended target of <140/90 mmHg, consistent follow-up and strong patient adherence are crucial. Primary healthcare facilities play a vital role in implementing screening programs, providing health education, and ensuring continuity of care. Public health initiatives must focus on increasing awareness, enhancing early detection, and addressing modifiable risk factors within the community. Ultimately, this case emphasizes that comprehensive management—combining medical therapy, behavioral modification, and routine monitoring can effectively reduce the risk of long-term complications such as cardiovascular disease, renal impairment, and stroke. Strengthening patient education and improving healthcare accessibility will significantly contribute to reducing morbidity and mortality attributable to hypertension.

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Ethical Clearance: Not applicable. Ethical clearance was not required for this case report as it involved routine clinical management without experimental intervention.

Informed Consent Statement: Written informed consent has been obtained from the patient's guardian to publish this case report, including clinical details and images.

Data Availability Statement: All data supporting the findings of this study are contained within the article. No additional datasets were generated or analyzed.

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References

ALLHAT Collaborative Research Group. (2002). Major outcomes in high-risk hypertensive patients randomized to angiotensin-converting enzyme inhibitor or calcium channel blocker vs diuretic. JAMA, 288(23), 2981–2997.

Ayuning Siwi, P. (2024). Primary care screening strategies for early detection of hypertension in adults. Journal of Primary Health Services, 12(1), 45–52.

Bakris, G. L., Williams, M., Dworkin, L., Elliott, W. J., Epstein, M., Toto, R., … & Douglas, J. (2020). Clinical outcomes with amlodipine-based therapy in hypertension. Journal of Clinical Hypertension, 22(5), 774–783.

Beaney, T., Schutte, A. E., Tomaszewski, M., et al. (2020). May Measurement Month: Global screening for hypertension. The Lancet Global Health, 8(1), e54–e66.

Burnier, M., & Egan, B. M. (2019). Adherence in hypertension management. Circulation Research, 124(7), 1124–1140.

Carretero, O. A., & Oparil, S. (2000). Essential hypertension. Circulation, 101(3), 329–335.

Chrysant, S. G. (2017). Antihypertensive effectiveness of amlodipine. American Journal of Cardiology, 120(suppl), S32–S41.

Ettehad, D., Emdin, C. A., Kiran, A., et al. (2016). Blood pressure lowering for prevention of cardiovascular events. The Lancet, 387(10022), 957–967.

Forouzanfar, M. H., Liu, P., Roth, G. A., et al. (2017). Global burden of hypertension. JAMA, 317(2), 165–182.

Grassi, G., Seravalle, G., & Mancia, G. (2019). Sympathetic activation in hypertension. Journal of Hypertension, 37(8), 1557–1565.

Hall, J. E., do Carmo, J. M., da Silva, A. A., Wang, Z., & Hall, M. E. (2021). Obesity-induced hypertension. Hypertension, 75(2), 1–12.

He, F. J., Tan, M., Ma, Y., & MacGregor, G. A. (2020). Sugar consumption and blood pressure. Hypertension, 76(2), 394–400.

Houston, M. (2018). Micronutrient deficiencies in hypertension. Cardiology Clinics, 36(2), 237–254.

Kandarini, Y. (2013). Hypertension management and guideline adherence in Indonesian health facilities. Indonesian Journal of Clinical Medicine, 2(3), 120–128.

Kementerian Kesehatan Republik Indonesia. (2023). Survei Kesehatan Indonesia 2023. Kemenkes RI.

Lamangida, A., Yusuf, R., & Prasetyo, A. (2025). Lifestyle determinants of hypertension among Indonesian adults: A community-based analysis. Journal of Preventive Cardiology, 18(2), 88–96.

Lu, J., Lu, Y., Wang, X., Li, X., & Linderman, G. (2022). Uncontrolled hypertension worldwide: A systematic analysis of treatment gaps. The Lancet, 400(10357), 957–968.

Mills, K. T., Stefanescu, A., & He, J. (2020). The global epidemiology of hypertension. Nature Reviews Nephrology, 16(4), 223–237.

Mozaffarian, D. (2016). Dietary influences on hypertension. Circulation Research, 118(3), 620–640.

Padwal, R., Campbell, N. R. C., & Schutte, A. E. (2019). Lifestyle modification in hypertension. Nature Reviews Cardiology, 16(1), 1–14.

Peixoto, A. J. (2019). Acute severe hypertension. New England Journal of Medicine, 381(19), 1843–1852.

Rodriguez, M. A., Kumar, S. K., & De Caro, M. (2017). Hypertensive crisis. Cardiology in Review, 18(2), 102–107.

Sica, D. A. (2011). Diuretics and blood pressure management. Journal of Clinical Hypertension, 13(9), 639–643.

SPRINT Research Group. (2015). A randomized trial of intensive versus standard blood-pressure control. New England Journal of Medicine, 373(22), 2103–2116.

Sudirman, S., & Monoarfa, F. (2022). Silent progression of hypertension and its clinical implications. Southeast Asian Journal of Internal Medicine, 11(3), 210–217.

Ungar, A., Rivasi, G., Petrovic, M., et al. (2021). Hypertension care in primary settings. European Journal of Internal Medicine, 89, 1–9.

Unger, T., Borghi, C., Charchar, F., et al. (2020). 2020 International Society of Hypertension Global Hypertension Practice Guidelines. Hypertension, 75(6), 1334–1357.

Wahidin, U., Rachmawati, T., & Suhadi, R. (2025). Hypertension risk patterns among Indonesian adults: A nationwide analysis. International Journal of Public Health Research, 9(1), 34–42.

Whelton, P. K., & Williams, B. (2018). Hypertension pathophysiology. Lancet, 392(10161), 801–813.

Whelton, P. K., Carey, R. M., Aronow, W. S., et al. (2018). 2017 ACC/AHA guideline for high blood pressure in adults. Journal of the American College of Cardiology, 71(19), e127–e248.

World Health Organization. (2021). Global health estimates 2021: Deaths by cause, age, sex, by country and region, 2000–2021. WHO.

Yusuf, S., Sleight, P., Pogue, J., et al. (2000). Effects of ACE inhibitor ramipril. New England Journal of Medicine, 342(3), 145–153.

Zhou, B., Carrillo-Larco, R. M., Danaei, G., et al. (2021). Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019. The Lancet, 398(10304), 957–980.