

Section: General Nursing

Acupressure therapy to reduce headache pain in patient with hypertension

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Abstract

Hypertension, or high blood pressure, is frequently referred to as "the silent killer" because it often presents without symptoms. Blood pressure is measured in two phases: systolic, which is the pressure in the blood vessels when the heart pumps, and diastolic, which is the pressure when the heart is at rest. Uncontrolled hypertension often leads to secondary symptoms, such as severe headaches. The purpose of this case study was to determine the effect of acupressure therapy on reducing headache intensity in a specific patient, Mr. Z (48 years old), who was admitted to the Temanggung Regional General Hospital with a blood pressure reading of 190/120 mmHg. Based on the clinical results and subsequent data analysis, it can be concluded that there was a significant reduction in headache levels after the administration of acupressure therapy.

Keywords: Complementary therapy, headache, hypertension, nursing care, pain management

Introduction

Hypertension, commonly known as the "silent killer," often progresses without noticeable symptoms while remaining a primary contributor to heart disease, kidney failure, and stroke (Mirzaye et al., 2026; Priya & Thakur, 2025). Globally, high blood pressure stands as a leading cause of mortality, with essential hypertension accounting for 90–95% of all cases. According to the World Health Organization (WHO, 2023), approximately 1.28 billion adults aged 30–79 worldwide live with hypertension, two-thirds of whom reside in low- and middle-income countries. Projections suggest that cases in developing nations will rise by 80%, increasing from 639 million in 2000 to an estimated 1.15 billion by 2025. This trend is mirrored locally in Indonesia; for instance, the 2021 Central Java Health Profile recorded over 8.7 million hypertensive individuals aged 15 and older, representing roughly 30.4% of that population segment.

Headaches—typically felt in the neck and nape—are among the earliest and most common symptoms of hypertension (Kanazawa & Kuniyoshi, 2024). These headaches are triggered by systemic vascular damage, particularly structural changes in the small arteries and arterioles that lead to vessel narrowing and ischemia (Kapoor, 2013). When arterial flow is disrupted, the affected brain tissues experience a decrease in O₂ and an accumulation of CO₂. This imbalance shifts cellular respiration toward anaerobic metabolism, which increases lactic acid production and stimulates capillary pain receptors in the brain. To address this acute pain, both pharmacological and non-pharmacological interventions can be utilized. Pharmacological management typically involves antihypertensive medications, such as amlodipine (which relaxes vascular smooth muscle) or captopril (which dilates blood vessels) (Heidari et al., 2022). Conversely, non-pharmacological nursing interventions focus on comprehensive pain management through observation, therapeutic communication, education, and collaboration. A standard non-pharmacological supportive therapy is acupressure. Acupressure stimulates local sensory nerve cells, transmitting signals to the spinal medulla, the mesencephalon, and the hypothalamic-pituitary complex (Pramiyanti et al., 2024). This pathway activates the release of endorphins—natural analgesics that block pain transmission and induce a sense of calm. Furthermore, acupressure triggers histamine release, which promotes vasodilation, thereby reducing both headache intensity and systemic blood pressure. Despite these proven benefits, observations at the Temanggung Regional General Hospital (RSUD Temanggung) reveal a clinical gap: pain management remains heavily reliant on analgesics and deep-breathing relaxation. Acupressure has yet to be integrated into standard nursing care for hypertensive patients at this facility.

The rationale for conducting a case study on acupressure therapy for hypertensive headaches is built upon bridging the gap between clinical pathophysiology and practical nursing care. From a physiological standpoint, hypertension causes structural damage to small blood vessels, leading to narrowing and reduced blood flow. When arterial flow to the brain is disrupted, tissues experience a drop in oxygen and a rise in carbon dioxide. This forced shift to anaerobic metabolism increases lactic acid, which directly stimulates pain receptors in the brain, causing severe headaches (typically felt in the neck and nape). While pharmacological treatments like amlodipine or captopril are standard for lowering blood pressure, they often do not immediately resolve acute pain, and heavy reliance on

pharmaceutical analgesics can lead to unwanted side effects or drug interactions. This case study is critical because it tests a non-pharmacological, nursing-led alternative: acupressure. Acupressure acts as a natural analgesic by stimulating local sensory nerves that signal the spinal medulla, mesencephalon, and the hypothalamic-pituitary complex to release endorphins. These endorphins block pain signals, providing immediate comfort. Furthermore, acupressure triggers the release of histamine, which dilates local blood vessels and lowers systemic tension. Despite these clear physiological benefits, observational data from hospitals—such as RSUD Temanggung—reveal a significant clinical gap where pain management remains heavily dominated by medication and basic deep-breathing exercises. Acupressure is rarely integrated into standard nursing care protocols for hypertensive patients. Therefore, this case study is necessary to provide empirical, bedside evidence showing that acupressure is a safe, cost-effective, and highly viable nursing intervention to alleviate hypertensive headaches in acute clinical settings.

Case Description

The research design employed in this study is a clinical case study, which provides an in-depth, qualitative approach focused on a single individual within a real-life healthcare context (Greenhalgh, 2025; Budgell, 2008). This specific report focuses on the application of nursing care through acupressure massage therapy as a non-pharmacological intervention to reduce the pain scale in hypertensive patients. By utilizing this approach, the author was able to directly evaluate the immediate effects of acupressure on the patient's clinical condition, specifically monitoring its efficacy in alleviating headache intensity. The subject of this case study was an individual diagnosed with hypertension presenting with the nursing diagnosis of acute pain at the Temanggung District General Hospital. The subject was specifically selected based on the clinical criteria of persistent headache complaints. The intervention focused on the targeted application of acupressure at several key anatomical points, including Zusanli (ST36), Taichong (LV3), Fungchi (GB20), Jianjing (GB21), Hegu (LI4), and Baihui (GV20), all of which are traditionally recognized for their role in pain modulation and blood pressure regulation. Data collection was conducted through a comprehensive multi-method approach. This included structured interviews to gather subjective data before and after the intervention, alongside direct observation and physical examinations to monitor vital signs such as blood pressure, heart rate, respiratory rate, and body temperature. Additionally, clinical documentation—including medical records, laboratory results, and nursing observation sheets—was reviewed to ensure accuracy. The primary instruments used to facilitate this study were a nursing assessment sheet based on the 13 NANDA domains and a specialized observation form to track patient responses throughout the therapy.

Discussion

During the interview, a patient named Mr. Z, aged 48, is a Muslim of Javanese ethnicity. Mr. Z works as a security guard at the IBI building. He lives with his wife and two children. During the assessment, Mr. Z's blood pressure was measured at 190/120 mmHg, rapid respiration 20 bpm, heart rate 100 bpm, fever 37°C. Mr. Z said he felt dizzy. He also mentioned that he experiences pain in the back of his head with a pain scale of 5 (0-10), the pain feels sharp and continuous, and the client stated that his sleep pattern and activities are disturbed due to this pain. Mr. Z appeared to grimace in pain. Acupressure therapy was administered for three consecutive days at The Zusanli (ST36), Taichong (LV3), Fungchi (GB20), Jianjing (GB21), Hegu (LI4), Baihui (GV20) points, each session lasting 10 minutes. The patient was positioned semi-fowler, with pre- and post-session evaluation of vital signs and subjective complaints.

Based on the assessment data, the author identified the prioritized nursing diagnoses. The first is (D.0077) Acute pain is associated with physiological injuring agents (increased vascular pressure) as evidenced by the patient reporting a headache (P: high blood pressure, Q: throbbing, R: whole head, S: 5, T: continuous), Objective data: Blood pressure: 190/120 mmHg, Pulse: 82 bpm, RR: 20 bpm, S: 37°C. The patient appears to be grimacing in pain. After interventions were carried out for three consecutive days (3x24 hours), it was expected that the pain level (L.08066) would decrease, with outcome criteria including reduced pain complaints, reduced grimacing, and improved sleep quality. The second diagnosis is the risk of ineffective cerebral perfusion (D.0017) is evidenced by hypertension. After 3x24 hours of interventions, then cerebral perfusion increases (L.02014), with the following outcome criteria headache decreases, anxiety decreases, average blood pressure improves, systolic blood pressure improves, and diastolic blood pressure improves. The intervention provided for the first diagnosis was acute pain (I.08238), which included Identify the location, characteristics, duration, frequency, quality, and intensity of pain. Identify the pain scale, identify factors that exacerbate and influence pain. Provide non-pharmacological techniques to reduce pain (Acupressure). Control the environment that exacerbates pain (e.g., room temperature, lighting, noise). Explain the causes and triggers of pain. Teach non-pharmacological techniques to reduce pain (Acupressure).

After the non-pharmacological therapy using acupressure was implemented, the pain scale results for Mr. Z showed a decrease during treatment, with his pain reducing from a scale of 5 to 2. This decrease in pain scale occurred due to the effects of acupressure therapy, which helps improve blood flow that was obstructed due to the narrowing of blood vessels causing the pain. According to the study that acupressure therapy applied will stimulate the sensory nerve cells around the acupressure points, which will be transmitted to the spinal medulla, then to the midbrain and the hypothalamic pituitary complex, all three of which are activated to release endorphins that can provide a sense of calm and comfort (Lu et al., 2021). Acupressure also stimulates the release of histamine which affects the vasodilation

of blood vessels; both benefits of acupressure can reduce headache and blood pressure (Hsieh et al., 2010; Lin et al., 2025). Research stated that the results of the application of acupressure therapy indicate that after the application of acupressure therapy, there is a significant effect before and after the therapy was given on the changes in headache in hypertensive patients (Urits et al., 2020). A challenge during the implementation of this intervention was the initial hesitation of the patient and their family to perform the acupressure due to fear of causing pain. However, after being given a clear explanation regarding the benefits of acupressure and learning that previous studies had supported its use, both the patient and family became more confident and were able to perform the acupressure correctly as taught.

This finding is consistent with theory states that acupressure therapy has many functions for health, one of which is to reduce both acute and chronic pain (Niruthisard et al., 2024; Nielsen et al., 2022). Pain occurs due to an imbalance in the flow of 'qi' in the body (Adams, 2016). Acupressure will balance the flow of energy 'qi' in the body, thus eliminating pain as well as healing the illness being suffered. The patient showed enthusiasm and cooperation, indicating the importance of patient involvement in therapy decision-making and the value of integrating complementary approaches into clinical nursing care. In this final nursing scientific work, the author focuses on one patient who was observed for the effectiveness of complementary therapy using acupressure on the points Taichong, Zusanli, Hegu, Baihui, Fengchi, and Jianjing in managing pain. The patient showed improvement over three days of treatment, with a reduction in the headache pain scale, leading to discharge. Since some hypertensive patients had never received complementary therapy involving acupressure at RSUD Temanggung, this final scientific work could serve as a reference for future studies. It may contribute to the identification of effective interventions for managing headache pain in hypertensive patients.

Conclusion

The implementation of complementary acupressure therapy proved highly beneficial for patients managing hypertension. This intervention successfully reduced the intensity of headaches, stabilized vital signs—specifically blood pressure—and significantly improved overall patient comfort and sleep quality. These results indicate that non-pharmacological interventions like acupressure serve as an essential component of holistic pain management, offering a safe and effective supplement to traditional clinical care. Based on these findings, it is recommended that educational institutions utilize this nursing care implementation as a practical reference for addressing posterior headaches in hypertensive patients through acupressure methods. Similarly, health service institutions are encouraged to integrate these results into their clinical protocols. By adopting acupressure therapy as a standardized reference for pain management, healthcare providers can offer a more comprehensive and non-invasive approach to treating the specific discomforts associated with hypertension.

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