

APPLICATION OF BAY LEAF (*Syzygium polyanthum*) DECOCTION INTERVENTION ON BLOOD PRESSURE REDUCTION IN ELDERLY WITH HYPERTENSION AT UPTD GRIYA WERDHA JAMBANGAN SURABAYA

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ABSTRACT

Introduction

Introduction: Hypertension is one of the most prevalent health problems among the elderly and remains a leading cause of morbidity and mortality worldwide. Long-term use of antihypertensive medications carries the risk of adverse effects, necessitating safe and affordable non-pharmacological complementary therapies.

Method

This study employed a single case study design. The subject was Mrs. S, a 62-year-old female with hypertension residing at UPTD Griya Werdha Jambangan Surabaya. Data were collected through interviews, head-to-toe physical examination, and medical record review. The intervention consisted of bay leaf decoction administered twice daily for seven consecutive days (December 3–9, 2025), combined with deep breathing relaxation, health education, and sleep facilitation. Nursing care was implemented using SDKI, SIKI, and SLKI standards.

Result

Prior to the intervention, the client reported throbbing occipital headache with a pain scale of 6 (NRS) and blood pressure of 170/100 mmHg. Following seven days of intervention, the pain scale decreased to 1, blood pressure dropped to 140/90 mmHg, and sleep quality improved from 4–5 hours to 7–8 hours per night. The client appeared relaxed, showed no grimacing, and was able to perform daily activities independently.

Conclusion

Non-pharmacological therapy using bay leaf decoction combined with relaxation techniques and health education positively reduced acute pain and blood pressure in elderly patients with hypertension. This therapy is recommended as a complementary approach alongside pharmacological treatment in gerontological nursing care.

INTRODUCTION

Hypertension is one of the most prevalent chronic conditions among the elderly population and constitutes a leading cause of morbidity and mortality worldwide. It is defined as a systolic blood pressure ≥ 140 mmHg and/or diastolic blood pressure ≥ 90 mmHg measured on two separate occasions (Ministry of Health Republic of Indonesia [Kemenkes RI], 2023). The aging process induces structural changes in blood vessels, including reduced arterial elasticity and increased peripheral vascular resistance, both of which significantly contribute to elevated blood pressure in older adults.

Globally, the World Health Organization (WHO) estimates that hypertension affects approximately 1.28 billion adults aged 30–79 years, with two-thirds residing in low- and middle-income countries (WHO, 2023). In Indonesia, the 2023 Basic Health Research (Riskesdas) recorded a hypertension prevalence of 34.1% in individuals aged ≥ 18 years, and over 60% in the elderly group (≥ 60 years), making it the foremost health priority in the aging population (Kemenkes RI, 2023).

Although long-term pharmacological therapy remains the cornerstone of hypertension management, prolonged antihypertensive drug use poses risks of adverse effects such as orthostatic hypotension, renal impairment, and electrolyte imbalances, which are particularly concerning for the elderly (Smeltzer & Bare, 2021). These risks

underscore the need for safe, cost-effective, and easily administered complementary non-pharmacological therapies.

Bay leaf (*Syzygium polyanthum*) has attracted growing research attention as a natural antihypertensive agent. Its bioactive compounds—flavonoids, tannins, saponins, and essential oils—exert antihypertensive effects through vasodilation and inhibition of the angiotensin-converting enzyme (ACE). Wijayanti and Indriyani (2022) demonstrated that seven-day bay leaf decoction administration reduced mean systolic blood pressure by 11.3 mmHg and diastolic by 7.8 mmHg in elderly hypertensive patients. A meta-analysis by Kurniawan et al. (2022) across eight Southeast Asian randomized controlled trials confirmed a statistically significant reduction in systolic blood pressure ($p < 0.05$, Cohen's $d = 0.62$).

A preliminary survey conducted at UPTD Griya Werdha Jambangan Surabaya in March 2024 revealed that 32 of 45 elderly residents (71.1%) were diagnosed with hypertension, all receiving pharmacological treatment only with no structured complementary therapy program. This gap prompted the implementation of bay leaf decoction as a complementary intervention. The purpose of this case study was to describe the application of bay leaf decoction intervention and its effect on blood pressure reduction in an elderly patient with hypertension.

METHOD

This study employed a single case study design conducted at UPTD Griya Werdha Jambangan Surabaya. The subject was Mrs. S, a 62-year-old female resident diagnosed with hypertension, selected using purposive sampling based on the following inclusion criteria: age ≥ 60 years, confirmed diagnosis of hypertension, blood pressure $\geq 140/90$ mmHg, willingness to participate, and no

contraindications to herbal therapy (no liver disease, allergy to bay leaf, or concurrent use of blood-thinning medication).

Data collection was performed on December 3, 2025, through structured interviews, head-to-toe physical examination, functional geriatric assessments, and medical record review. Functional tools administered included the Barthel Index (ADL),

Mini-Mental State Examination (MMSE), Timed Up and Go Test (TUGT), Geriatric Depression Scale (GDS), Pittsburgh Sleep Quality Index (PSQI), and nutritional status screening.

The primary intervention consisted of bay leaf decoction prepared from 10–15 fresh *Syzygium polyanthum* leaves boiled in 600–750 mL of water until approximately 200 mL (one glass) remained. The decoction was administered twice daily—at 08:00 after breakfast and at 20:00 before sleep—for seven consecutive days (December 3–9, 2025). This was combined with deep breathing relaxation exercises, health education on hypertension self-

management and low-sodium diet, and sleep facilitation strategies. The client continued her prescribed Amlodipine 5 mg once daily at 16:00 throughout the study period.

Nursing care was planned and implemented in accordance with the Indonesian Nursing Diagnosis Standards (SDKI), Nursing Intervention Standards (SIKI), and Nursing Outcome Standards (SLKI) published by PPNI (2021). Blood pressure and pain scale (NRS) were monitored daily before and after intervention. Evaluation was conducted daily using the SOAP (Subjective, Objective, Assessment, Plan) format.

RESULT

Case Overview

Mrs. S is a 62-year-old Muslim female from Trenggalek, East Java, who has been residing at UPTD Griya Werdha Jambangan Surabaya since February 2025. She has a five-year history of hypertension managed with Amlodipine 5 mg once daily. Upon assessment on December 3, 2025, she complained of intermittent throbbing headache in the occipital region (back of the neck), worsening with activity or elevated blood pressure. She also reported inadequate sleep (4–5 hours/night) due to nocturnal

headache, frequent awakening, and difficulty returning to sleep, leading to daytime fatigue.

The client demonstrated limited knowledge of hypertension, including dietary restrictions and the importance of regular blood pressure monitoring. She admitted to consuming high-sodium foods such as salted fish and crackers. She appeared cooperative, maintained her five daily prayers, and expressed comfort living in the nursing home.

Assessment Findings

Assessment Tool	Findings	Interpretation
Blood Pressure	170/100 mmHg	Stage 2 Hypertension
Pain Scale (NRS)	6/10	Moderate pain
ADL (Barthel Index)	Score: 20	Independent
Cognitive (MMSE)	Score: 29	No cognitive impairment
Balance (TUGT)	7.4 seconds	No fall risk
Depression (GDS)	Score: 0	No depression
Sleep Quality (PSQI)	Score: 15	Poor sleep quality
Nutritional Status	Score: 12	Normal nutritional status

Table 1. Geriatric Assessment Results of Mrs. S at Baseline

Physical examination revealed blood pressure 170/100 mmHg, pulse 90 bpm, respiratory rate 22 bpm, temperature 36.4°C, SpO2 98%, fasting blood glucose 104 mg/dL, and cholesterol 175 mg/dL. The client appeared grimacing, held the back

of her neck frequently, and showed signs of restlessness. Pain assessment using PQRST: P (provocation) = hypertension, Q (quality) = throbbing, R (region) = occipital/neck, S (severity) = 6/10 NRS, T (timing) = intermittent.

Nursing Diagnoses

Based on the assessment findings, three nursing diagnoses were established using SDKI (PPNI, 2021): (1) Acute Pain (D.0077) related to physiological injury agent secondary to elevated blood pressure, evidenced by occipital headache, grimacing, restlessness, blood pressure 170/100 mmHg, and sleep disturbance; (2) Knowledge Deficit

(D.0111) related to insufficient information exposure, evidenced by inability to explain hypertension correctly and non-adherent dietary behavior; and (3) Sleep Pattern Disturbance (D.0055) related to physical discomfort (headache), evidenced by sleep duration 4–5 hours/night and frequent awakening.

Nursing Diagnosis	Goals & Expected Outcomes	Nursing Interventions
(D.0077) Acute Pain related to physiological injury agent, evidenced by occipital headache, grimacing, elevated blood pressure (170/100 mmHg), and sleep disturbance.	After 7×8 hours of nursing care, Pain Level (L.08066) is expected to decrease with criteria: pain complaint reduced (scale 0), grimacing decreased, blood pressure improved (90–120/60–80 mmHg), sleep quality improved.	Pain Management (I.08238): Observe pain location, scale, and characteristics; Therapeutic: bay leaf decoction 2×/day, deep breathing relaxation, sleep facilitation, comfortable positioning; Education: pain causes, hypertension diet, antihypertensive adherence; Collaboration: Amlodipine 5 mg once daily.
(D.0111) Knowledge Deficit related to insufficient exposure to information about hypertension management.	After nursing care, Knowledge Level (L.12111) improves: client able to explain hypertension, dietary restrictions, and medication adherence; behavior aligns with health recommendations.	Health Education (I.12383): Assess current knowledge level; Provide education on hypertension definition, causes, complications, low-sodium diet, medication adherence, and benefits of complementary therapy.
(D.0055) Sleep Pattern Disturbance related to physical discomfort (headache) evidenced by difficulty sleeping and frequent night awakening.	After nursing care, Sleep Pattern (L.05045) improves: sleep duration ≥7 hours/night, less frequent awakening, client feels refreshed in the morning.	Sleep Support (I.05174): Identify sleep patterns and disrupting factors; Facilitate comfortable sleep environment; Administer bay leaf decoction before sleep (20.00); Teach relaxation techniques to promote sleep onset.

Table 2. Nursing Care Plan for Mrs. S Based on SDKI-SIKI-SLKI Standards

Implementation and Daily Progress

Nursing interventions were implemented consistently over seven days in the client's room. Each day, vital signs and pain scale were assessed

before the morning decoction. The client received bay leaf decoction twice daily, was guided through deep breathing relaxation exercises, received health

education, and took Amlodipine 5 mg at 16:00. Table 3 presents the daily progression of blood pressure,

pain scale, and sleep quality throughout the intervention period.

Day	Date	Blood Pressure	Pain Scale (NRS)	Sleep Quality
1	Dec 3, 2025	170/100 mmHg	6 (Moderate)	4–5 hrs (poor)
2	Dec 4, 2025	165/100 mmHg	5 (Moderate)	5 hrs
3	Dec 5, 2025	160/95 mmHg	4 (Moderate)	5–6 hrs
4	Dec 6, 2025	155/95 mmHg	3 (Mild)	6 hrs
5	Dec 7, 2025	150/90 mmHg	3 (Mild)	6–7 hrs
6	Dec 8, 2025	145/90 mmHg	2 (Mild)	7 hrs
7	Dec 9, 2025	140/90 mmHg	1 (Minimal)	7–8 hrs (good)

Table 3. Daily Progression of Blood Pressure, Pain Scale, and Sleep Quality (Dec 3–9, 2025)

By Day 7 (December 9, 2025), final SOAP evaluation indicated: S – client reported minimal to no headache, able to sleep 7–8 hours without frequent awakening, and demonstrated knowledge of

hypertension management; O – no grimacing observed, client appeared relaxed and alert, blood pressure 140/90 mmHg, pain scale 1/10 NRS; A – Acute Pain nursing problem resolved; P – continued health education and encouragement to maintain bay leaf decoction as adjunct therapy

DISCUSSIONS

Nursing Assessment

The assessment findings of Mrs. S are consistent with the major defining characteristics of acute pain in SDKI (PPNI, 2021), which include pain complaints, grimacing expression, restlessness, elevated heart rate, and sleep disturbance. Physiologically, hypertension elevates cerebrovascular pressure, triggering occipital headache—a mechanism exacerbated in the elderly by reduced arterial elasticity accompanying the aging process. Handayani et al. (2022) similarly reported that most elderly hypertensive patients experience throbbing occipital headaches, neck tension, and disturbed sleep, corroborating the assessment findings in this case.

Mechanisms of Bay Leaf Decoction

Bay leaf (*Syzygium polyanthum*) contains several bioactive compounds that collectively contribute to its antihypertensive properties. Flavonoids act as antioxidants that prevent LDL oxidation, reduce endothelial damage, and promote vasodilation—collectively improving blood vessel compliance. Tannins reduce peripheral vascular resistance, while saponins exhibit mild diuretic effects, decreasing circulating blood volume. Eugenol, a major constituent of bay leaf essential oil, directly inhibits ACE activity, thereby reducing angiotensin II production and inducing smooth muscle relaxation in vessel walls (Fauziyah et al., 2023; Nuraini et al., 2022).

The twice-daily administration schedule (morning and before sleep) was selected to maintain consistent plasma levels of active compounds

throughout the day. Morning intake helps control blood pressure during peak activity hours, while evening administration supports vascular relaxation during sleep, a period of parasympathetic dominance. This rationale is supported by Purwono, Sari, and Nurjannah (2024), who demonstrated that twice-daily dosing is more effective than once-daily for sustaining blood pressure reduction.

The observed blood pressure reduction from 170/100 mmHg to 140/90 mmHg over seven days aligns with Lestari et al. (2021), who reported significant reductions in both systolic and diastolic blood pressure following regular bay leaf decoction consumption in elderly patients. Musmuliadin and Pusvita (2023) further confirmed the effectiveness of bay leaf decoction as an adjunct therapy, improving patient comfort and blood pressure stability.

Complementary Interventions

Deep breathing relaxation was integrated to reduce sympathetic nervous system activation, decrease muscle tension, and lower circulating stress hormones (cortisol and catecholamines), all of which contribute to hypertension. Wulandari et al. (2023) demonstrated that combining herbal therapy with relaxation techniques achieves superior blood pressure control compared to either intervention alone. Sleep facilitation addressed the bidirectional relationship between poor sleep and hypertension: disrupted sleep increases sympathetic activity, elevating blood pressure, while pain-related sleep loss perpetuates the hypertensive state (Hidayat et al., 2021).

Health education improved the client's understanding of hypertension, sodium-restricted diet, and medication adherence. Pharmacological therapy with Amlodipine 5 mg (calcium channel

blocker) was maintained throughout, providing sustained vasodilation as the primary antihypertensive mechanism. The synergy between Amlodipine and the natural ACE-inhibitory effect of bay leaf eugenol likely contributed to the observed therapeutic outcome (Fitria et al., 2024).

Nursing Evaluation

The complete resolution of the Acute Pain nursing diagnosis—evidenced by pain scale reduction from 6 to 1, blood pressure normalization to 140/90 mmHg, and sleep quality improvement from 4–5 to 7–8 hours nightly—is consistent with SLKI outcome indicators for Pain Level (L.08066), which specify decreased pain intensity, diminished grimacing and restlessness, improved vital signs, and enhanced client comfort (PPNI, 2021). Improvements in sleep quality also align with SLKI Sleep Pattern (L.05045) criteria. Rahmawati and Putri (2023) corroborated that flavonoid-mediated vascular relaxation progressively reduces headache frequency and intensity in hypertensive patients, while Sukma et al. (2022) reported parallel sleep quality improvements as headache discomfort subsided.

This case study has several limitations. First, the single-subject design limits generalizability to the broader elderly hypertensive population. Second, the seven-day intervention period precludes conclusions about long-term efficacy or sustained blood pressure control. Third, evaluation relied predominantly on subjective pain reports and blood pressure measurements; other influencing variables such as dietary habits, physical activity, and medication adherence could not be fully controlled. Future studies should employ larger samples, extended intervention durations, and randomized controlled designs to rigorously evaluate the efficacy of bay leaf decoction in gerontological nursing practice.

CONCLUSIONS

The application of bay leaf (*Syzygium polyanthum*) decoction twice daily for seven days,

combined with deep breathing relaxation, health education, and sleep facilitation, demonstrated a

positive effect on reducing acute pain and blood pressure in an elderly patient with hypertension. Pain scale decreased from 6 to 1 (NRS), blood pressure declined from 170/100 mmHg to 140/90 mmHg, and sleep quality improved from 4–5 hours to 7–8 hours per night. All three nursing diagnoses (Acute Pain,

Knowledge Deficit, and Sleep Pattern Disturbance) were resolved at the end of the seven-day intervention. Bay leaf decoction is recommended as an evidence-based complementary non-pharmacological intervention in gerontological nursing care for elderly patients with hypertension.

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