


# Enhancing Sleep Quality in Hypertensive Patients: A Case Study of Slow Stroke Back Massage within Family Nursing Care

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Article information	Abstract
<p><b>Article history:</b>                      Received: August 20<sup>th</sup>, 2025                      Revised: September 15<sup>th</sup>, 2025                      Accepted: February 26<sup>th</sup>, 2026</p> <hr/> <p><b>Corresponding author:</b>                      Name: Minarti, S.Kep., Ns., M.Kep., Sp.Kom                      Address: Jl. Mayjend. Prof. Dr. Moestopo No. 8 C, Airlangga, Kec. Gubeng, Surabaya, Jawa Timur 60286.                      E-mail: minartiivan@gmail.com</p> <hr/> <p>International Journal of Nursing and Health Services (IJNHS), Volume 9, Issue 1, February 20<sup>th</sup>, 2026                      DOI: 10.35654/ijnhs.v9i1.892                      E-ISSN: 2654-6310</p>	<p><b>Introduction:</b> Hypertension is a prevalent condition among the elderly, often leading to poor sleep quality. <b>Objective:</b> This case study aimed to describe the effect of Slow Stroke Back Massage (SSBM) combined with family nursing care in improving sleep quality among elderly hypertensive patients. <b>Method:</b> This descriptive case study involved two elderly hypertensive patients receiving family nursing care at <i>Puskesmas Tambak Wedi</i>, Surabaya. The intervention consisted of SSBM performed for 30 minutes every two days for a week. Data were collected through observation, interviews, and the Pittsburgh Sleep Quality Index (PSQI). <b>Results:</b> Both patients showed improved sleep quality, as indicated by decreased PSQI scores (from 14 to 5 and from 16 to 6) and better blood pressure control. These findings describe individual improvements observed in two cases. <b>Recommendation:</b> Slow Stroke Back Massage can be considered a supportive nursing intervention within family care. However, as this study involved only two participants, the findings are not generalizable and should be interpreted as case-based observations.</p> <p><b>Keywords:</b> Family Nursing Care, Hypertension, Sleep Quality, Slow Stroke Back Massage, Case Study.</p>
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## INTRODUCTION

Hypertension is one of the most common chronic conditions among the elderly and is closely associated with poor sleep quality. Sleep disturbances can aggravate blood pressure instability and contribute to a cycle of fatigue, anxiety, and cardiovascular risk. The World Health Organization (WHO) estimates that more than 1.1 billion people worldwide live with hypertension, and its prevalence increases with age (1). Poor sleep quality among elderly hypertensive patients not only worsens physical health but also decreases emotional well-being and daily functioning (2,3). Therefore, improving sleep quality has become an essential component in managing hypertension among older adults.

Pharmacological treatment remains a standard approach for controlling blood pressure and sleep problems; however, long-term use of medication may lead to side effects such as dizziness, dependence, and sedation, particularly in the elderly (4). Consequently, complementary and non-pharmacological therapies are increasingly used as safe and cost-effective alternatives. One of the simple and practical methods is Slow Stroke Back Massage (SSBM), a technique that promotes relaxation through rhythmic and gentle stroking movements on the back. Previous studies have shown that SSBM may enhance parasympathetic activity, reduce pain, and improve sleep quality in patients with hypertension (5,6).

Despite the growing evidence of SSBM's physiological benefits, limited research has explored its application within family nursing care, where family members are actively involved in providing continuous support to patients at home (7,8). Involving family caregivers is crucial in chronic disease management, as it encourages adherence to therapy and enhances comfort and emotional support (9). This study is guided by Family Systems Theory, which views the family as an interconnected unit influencing each member's health (10), and by the Biopsychosocial Model, which explains how biological, psychological, and social factors interact to shape health outcomes (11). Integrating these perspectives provides a more holistic understanding of patient care.

Therefore, this case study aims to describe the effect of Slow Stroke Back Massage (SSBM) combined with family nursing care in improving sleep quality and controlling blood pressure among two elderly hypertensive patients. The findings are expected to provide practical insight into how family-based complementary therapy can support nursing care in community settings.

## OBJECTIVE

The objective of this case study is to describe the effect of Slow Stroke Back Massage (SSBM) combined with family nursing care on sleep quality and blood pressure among two elderly patients with hypertension.

## METHODS

### Design

This study employed a descriptive case study design to explore the effect of Slow Stroke Back Massage (SSBM) combined with family nursing care in improving sleep quality and controlling blood pressure among elderly hypertensive patients. The case study design allowed for a detailed description of the nursing care process, including assessment, nursing diagnosis, planning, implementation, and evaluation conducted within the patients' natural home environment (10,12).

### Sample size and sampling technique

The participants consisted of two elderly patients diagnosed with hypertension and sleep disturbances who were selected using purposive sampling based on inclusion and exclusion criteria.

- Inclusion criteria included: (a) aged 60 years or above, (b) diagnosed with hypertension, (c) experiencing poor sleep disturbance, and (d) having at least one family member willing to participate in care implementation.
- Exclusion criteria included severe comorbidities, cognitive impairment, recent surgery, or inability to follow the intervention (13,14).

As a descriptive case study, the findings are not intended for generalization but to provide an in-depth understanding of the intervention process (15,16).

### The instrument for data collection

Sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI), a standardized and validated instrument widely used in previous studies (17). The PSQI consists of 19 self-rated questions generating seven component scores with a global range of 0–21, where higher scores indicate poorer sleep quality. In this study, the PSQI was not revalidated because of the small sample size; reliability and validity were based on prior research (18).

### Intervention

The intervention involved Slow Stroke Back Massage (SSBM) combined with family nursing care. SSBM was performed every two days for 30 minutes over a week. Family members received brief training to ensure proper massage technique and continuous support. The procedure followed standard SSBM guidelines described in previous studies (19–21).

### Data collection and analysis

Data were collected through interviews, direct observation, and physical assessment before and after the intervention. Parameters measured included PSQI score, blood pressure, pain intensity, and sleep duration. Data were presented descriptively in narrative and tabular form following the case study approach (22,23).

### Ethical consideration

Ethical approval for this study was granted by the Health Research Ethics Committee of Poltekkes Kemenkes Surabaya (No. EA/3563/KEPK-Poltekkes\_Sby/V/2025). Informed consent was obtained from all participants and family caregivers prior to participation.

## RESULTS

This case study involved two elderly female patients, Mrs. M (60 years old) and Mrs. A (61 years old), both diagnosed with hypertension and experiencing sleep disturbances. At baseline, Mrs. M reported neck pain that interfered with sleep initiation, while Mrs. A complained of persistent vertigo and

headaches. Their pre-intervention Pittsburgh Sleep Quality Index (PSQI) scores were 14 and 16 respectively, indicating poor sleep quality. Initial blood pressure readings were 165/96 mmHg for Mrs. M and 177/95 mmHg for Mrs. A.

The intervention Slow Stroke Back Massage (SSBM) combined with family nursing care was administered three times over a week. Each session lasted 30 minutes and was performed every two days. Family caregivers participated after brief training provided by the researcher.

During a week intervention, both patients demonstrated gradual improvement in total sleep time. Mrs. M's sleep duration increased from 3 to 6.5 hours per night, while Mrs. A's improved from 4 to 7 hours per night. The pattern of this improvement is presented in **Figure 1**, which shows consistent upward trends across all six days of intervention.

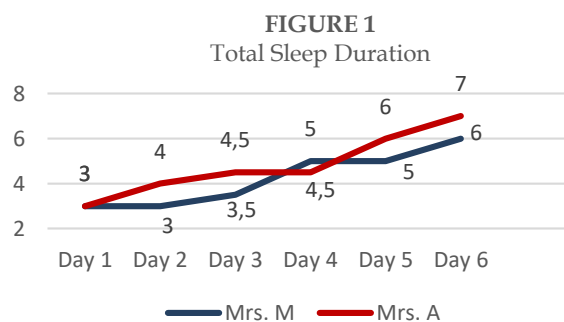


Figure 1. Total sleep duration of Mrs. M and Mrs. A during intervention

Based on the PQRST pain assessment, Mrs. M's pain score decreased from 6 to 1, and Mrs. A's from 7 to 2 after completing three SSBM sessions. The difference between pre- and post-intervention pain levels for both patients is displayed in **Figure 2**.

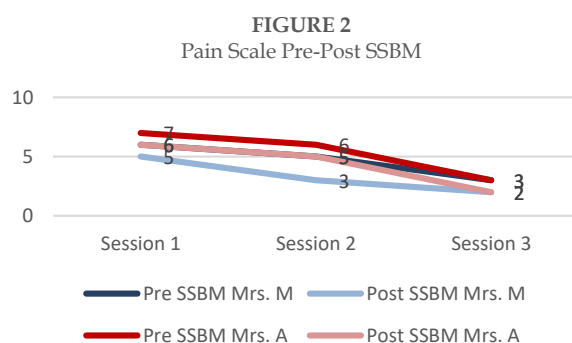
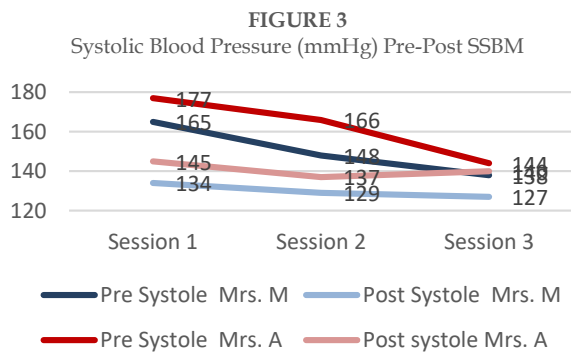
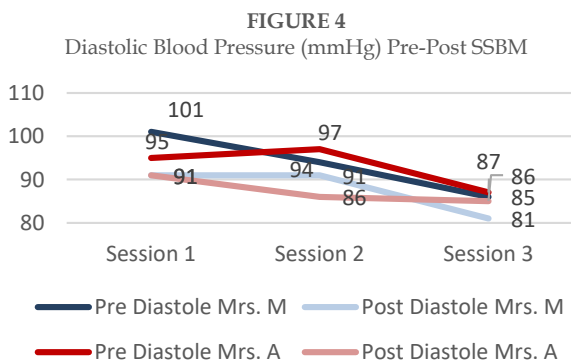


Figure 2. Pain scale observations for Mrs. M and Mrs. A before and after SSBM.

Both patients also experienced improvement in blood pressure readings following the intervention. As shown in **Figure 3**, Mrs. M's systolic pressure decreased from 165 mmHg to 134 mmHg, while Mrs. A's dropped from 177 mmHg to 145 mmHg after three sessions. Correspondingly, **Figure 4** presents changes in diastolic blood pressure, where Mrs. M's value decreased from 101 to 85 mmHg, and Mrs. A's from 95 to 86 mmHg.

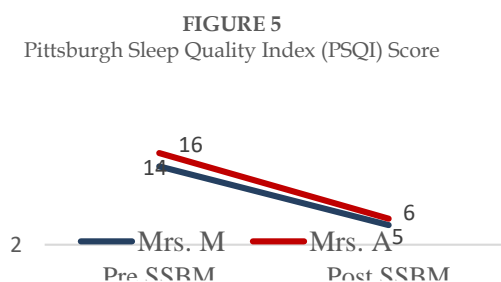


**Figure 3.** Systolic blood pressure of Mrs. M and Mrs. A pre- and post-SSBM.



**Figure 4.** Diastolic blood pressure of Mrs. M and Mrs. A pre- and post-SSBM

At the end of the intervention, both participants showed improvement in sleep quality scores. Mrs. M's PSQI decreased from 14 to 5, and Mrs. A's from 16 to 6. The comparison of pre- and post-intervention PSQI scores for both patients is illustrated in **Figure 5**.



**Figure 5.** Pittsburgh Sleep Quality Index (PSQI) scores of Mrs. M and Mrs. A before and after SSBM.

## DISCUSSION

The case study applied the nursing process using a family nursing care approach and Slow Stroke Back Massage (SSBM) to manage sleep pattern disturbance in elderly hypertensive patients. The process followed the standards of the Indonesian Nursing Association (*PPNI*), which emphasize holistic, family-centered care involving assessment, diagnosis, planning, implementation, and evaluation. The improvements observed after the intervention reflect how appropriate nursing actions, when guided by theory and supported by family involvement, can enhance both physiological and psychosocial adaptation in elderly patients with chronic illness. Similar findings were also reported by Wibowo et al. (24), who highlighted that applying *SDKI-SLKI-SIKI* standards in nursing documentation improves the accuracy and quality of community-based nursing care (25-27).

### Improvement of Sleep Pattern

Sleep quality and duration improved in both patients after SSBM was implemented, supported by family participation. Physiologically, massage activates mechanoreceptors in the skin that send afferent impulses to the central nervous system, stimulating the parasympathetic nervous system and suppressing sympathetic dominance. This process reduces catecholamine release (epinephrine and norepinephrine), lowers heart rate, decreases muscle tension, and creates a relaxation response conducive to sleep initiation (28-30). These mechanisms correspond to the Biopsychosocial Model (11), which explains that physiological, psychological, and social factors interact to

maintain balance in bodily function and well-being.

From a nursing perspective, improvement in sleep indicators corresponds to the Sleep Pattern Disturbance outcome in the *SLKI* (*Standar Luaran Keperawatan Indonesia*), where parameters such as sleep duration, latency, and continuity show measurable progress (26). The nursing intervention aligns with *SIKI* under the domain of "Sleep Support" and "Relaxation Therapy," where massage is one recommended action to promote rest in elderly care (27).

### **Pain and Comfort Management**

Pain reduction was another key outcome observed after the intervention. Before SSBM, both patients reported musculoskeletal discomfort that contributed to poor sleep. The improvement in pain scores after massage corresponds to the Comfort Management and Pain Level Control interventions outlined in *SIKI* (27). Massage promotes vasodilation, increases endorphin release, and reduces the transmission of pain impulses via the Gate Control Theory proposed by Melzack and Wall, where stimulation of large-diameter fibers inhibits pain signals in the dorsal horn of the spinal cord (19,20). In nursing theory, this result aligns with Kolcaba's Comfort Theory, which posits that relief, ease, and transcendence are the three states of comfort achieved through nursing interventions that address physical, psychospiritual, and environmental needs. Thus, SSBM provided physical comfort through muscle relaxation and psychospiritual comfort through caregiver touch and empathy. Studies by Hermawan et al. (20) and Ainun et al. (22) further support that slow back massage reduces perceived pain and promotes overall relaxation in elderly populations.

### **Blood Pressure Regulation**

Stabilization of blood pressure in both patients after SSBM is consistent with the physiological principle that activation of the

parasympathetic nervous system decreases vascular tone and peripheral resistance, leading to lower blood pressure (4,31). This finding supports Guyton and Hall's physiological model, which explains that autonomic modulation directly influences baroreceptor reflexes that maintain blood pressure homeostasis (5). Nursing actions aimed at non-pharmacological blood pressure control correspond to the *SLKI* outcome Circulatory Status: Blood Pressure and the *SIKI* intervention Hypertension Management. Previous studies have also demonstrated that SSBM improves circulation and reduces cardiac workload in elderly hypertensive patients (23,31). These consistent outcomes highlight the therapeutic potential of integrating complementary techniques into routine family nursing care.

### **Theoretical Integration and Family Involvement**

The integration of Family Systems Theory (10) in this case emphasizes that the health of one family member influences and is influenced by the entire family system. Family involvement was evident through active participation in learning and performing SSBM, maintaining medication schedules, and creating a restful environment. This aligns with Friedman's model of family nursing, which identifies the family as both a resource and a recipient of nursing care. The involvement of family caregivers supported behavior modification, improved adherence, and increased patients' sense of security key psychosocial aspects outlined in the Biopsychosocial Model (11).

The importance of family empowerment is also supported by Arisanti et al. (32), who found that the implementation of a family nursing care model improved caregiver independence in managing hypertensive elderly patients. Furthermore, according to Orem's Self-Care Deficit Theory (9), nursing interventions aim to enhance the client's and family's ability to perform self-care activities.

By teaching family members SSBM, nurses not only met immediate needs but also strengthened the family's self-care agency, ensuring sustainability of care at home.

### Evaluation and Nursing Implications

The evaluation phase indicated that both nursing diagnoses Disturbed Sleep Pattern and Acute Pain were resolved, while Ineffective Health Maintenance related to hypertension showed improvement. These outcomes demonstrate that applying SSBM within family nursing care effectively supports physiological stability, comfort, and psychosocial adaptation. The case highlights the nurse's role as educator and facilitator in empowering families to apply evidence-based complementary interventions safely in home care settings.

However, this case study was limited by a very small sample size and short observation period. The findings cannot be generalized but can serve as a practical reference for community and geriatric nurses to develop home-based interventions integrating complementary therapy, family participation, and culturally appropriate care strategies.

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### REFERENCES

- (1) World Health Organization. Global Health Observatory (GHO) data: Hypertension [Internet]. 2021 [cited 2025 May 27]. Available from: <https://www.who.int/data/gho/data/themes/topics/topic-details/GHO/hypertension>
- (2) Li Y, Wang M, CY. Hypertension and Sleep Disturbances: A Review of Recent Findings. *J Hypertens*. 2020;38(2):210-9.
- (3) Adinatha M, WT. The Role of Sleep in Hypertension Management in the Elderly. *J Geriatr Med*. 2019;45(1):12-130.
- (4) Hermawan H, Nugraha E, Tirtayasa H, et al. Slow Stroke Back Massage for Hypertension: A Systematic Review and Meta-Analysis. *Complement Ther Clin Pract*. 2024;16(3):212-21.
- (5) Guyton AC, Hall JE. *Guyton and Hall Textbook of Medical Physiology*. Philadelphia: Elsevier Inc.; 2021.
- (6) Venugopal V, Deenadayalan B, Poornima R, Yogapriya C. Effect of massage on blood pressure in patients with hypertension: A meta-analysis. *J Bodyw Mov Ther*. 2024;37:109-14.
- (7) Paramurthi IA, Suparwati KT, SN. The effectiveness of slow stroke back massage on improving sleep quality in the elderly. *Indones J Public Heal*. 2022;6(1):11-8.
- (8) Sasti M, Erwin T, Sulastri D. Pengaruh Teknik Slow Stroke Back Massage (SSBM) terhadap penurunan tekanan darah tinggi pada penderita hipertensi di Wilayah Kerja Puskesmas Purwo Agung Kabupaten Way Kanan. *J Multidisiplin Indones*. 2024;3(2):1128-41.
- (9) Luo ZN, Li K, Chen AQ, et al. The influence of family health on self-efficacy in patients with chronic diseases. *BMC Public Health*. 2024;24(1):3398.
- (10) Wang S, Li Z, CL. A Case Study on Family Nursing Interventions for Elderly Hypertension Patients. *J Nurs Pract*. 2023;34(7):543-50.
- (11) Potter P, Perry A. *Fundamental of Nursing*. 9th ed. Jakarta: Salemba Medika; 2017.
- (12) Gupta MR, MA. Designing case studies: A methodology for qualitative research. *Qual Health Res*. 2022;29(3):215-23.
- (13) Singh AP, KV. Purposive sampling in healthcare research: A systematic approach. *J Heal Res*. 2022;17(5):123-8.

- (14) Thompson HW, et al. Pittsburgh Sleep Quality Index: A measure of sleep quality in clinical research. *Sleep Med Rev.* 2021;45(2):52-8.
- (15) Liu JB, et al. Small-scale studies in healthcare research: Methodology and application. *Healthc Rev.* 2021;41(1):112-7.
- (16) Miller JT, et al. The impact of aging on hypertension and sleep disturbances. *J Gerontol Nurs.* 2021;43(2):45-50.
- (17) Rosyida Umam E, Sulistyono A, Yunitasari E. The Effect of a Combination of Autogenic and Benson Relaxation on Sleep Quality among Pregnant Women with Hypertension. *Int J Nurs Heal Serv.* 2020;3(4):501-6.
- (18) Harris MJ, SC. Validity and reliability of the Nursing Care Quality Questionnaire in elderly hypertensive patients. *J Nurs Care Pract.* 2020;15(3):67-74.
- (19) Suarilah I, Hayat M, IR. The effect of cutaneous stimulation: Slow stroke back massage on sleep quality improvement in elderly. *Syst Rev Pharm.* 2020;11(3):918-20.
- (20) Hermawan IW, Ryandini FR, Riani S. The effectiveness of slow stroke back massage on blood pressure and sleep quality in hypertensive patients. *Med J Nusant.* 2024;3(2):113-22.
- (21) Akpınar RB, Akın G, Ay E. The effect of back massage on sleep quality: A systematic review. *J Sleep Res.* 2022;31(4):e13479.
- (22) Ainun H, Ndruru GB, Baeha KY, Sunarti. The effect of back massage therapy on improving sleep quality in the elderly. *J Ilm Keperawatan.* 2020;6(2):93-8.
- (23) Yunus MA. The effect of SSBM therapy on sleep quality in the elderly. *J Online Keperawatan Rajawali.* 2023;1(1):67-78.
- (24) WAYNF R. Implementation of SDKI, SLKI, and SIKI-based nursing documentation to enhance clinical accuracy. *Int J Nurs Heal Serv.* 2021;4(3):289-98.
- (25) PPNI TPD. Standar Diagnosa Keperawatan Indonesia (SDKI). 1st ed.; 2017.
- (26) PPNI TPD. Standar Luaran Keperawatan Indonesia (SLKI).; 2019.
- (27) PPNI TPSD. Standar Intervensi Keperawatan Indonesia (SIKI). 1st ed.; 2018.
- (28) Pragy A. The effects of slow stroke back massage on sleep quality in elderly. *Complement Ther Clin Pract.* 2022;46:101501.
- (29) DSMSJ M. Impact of therapeutic touch on EEG alpha waves. *J Altern Complement Med.* 2025;31(2):157-63.
- (30) UY A. Effect of slow stroke back massage therapy on blood pressure changes in patients with hypertension. *J Ilm Univ Batanghari Jambi.* 2025;25(1):367-70.
- (31) Nurlathifah FA, Cahyani R, Merliani Nugraha R. Efektivitas terapi SSBM terhadap penurunan tekanan darah pada lansia hipertensi: A systematic review. *Proceeding Semin Nas Keperawatan.* 2022;8(1):194-202.
- (32) Mardiyono ANSY. The implementation of family nursing care model to improve family independence in caring for hypertensive elderly patients. *Int J Nurs Heal Serv.* 2021;4(1):45-53.