

## The Effect of Slow Stroke Back Massage Therapy on Reducing Headache Intensity in Patients with Hypertension at Rejosari Community Health Center, Pekanbaru

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### ABSTRACT

**Introduction:** Hypertension is the number one cause of death worldwide. Data from the World Health Organization (WHO) in 2023 showed that approximately 1.28 billion people worldwide suffer from hypertension. The number of cases of hypertension in Indonesia reached 63,309,620. Meanwhile, in Riau, the prevalence of hypertension was 33.1% and in Pekanbaru City, it was 21.1%. The most common symptom accompanying hypertension is headache. The application of slow stroke back massage therapy is effective for treating headaches in patients with hypertension. This study aims to determine the effect of slow stroke back massage therapy on reducing the intensity of headaches in patients with hypertension. **Method:** This study used a quantitative method using a quasi-experimental research design with a one-group pre-test-post-test research design. The sample obtained was 29 people who were taken using a nonprobability sampling technique. The instrument used was an observation sheet with an NRS (Numeric Rating Scale). **Results:** The results of the Wilcoxon test obtained a p-value = 0.000, which means there is an effect of slow stroke back massage therapy on reducing the intensity of headaches in patients with hypertension. **Conclusion:** Based on the research findings, it can be concluded that the majority of respondents suffered from stage 1 hypertension (86.2%). Prior to receiving SSBM therapy, the majority of respondents experienced moderate headaches (75.9%), whereas after receiving SSBM therapy, the majority experienced mild headaches (69.0%). The Wilcoxon test results showed a p-value of 0.000 ( $p < 0.05$ ), indicating that SSBM therapy has an effect on reducing headache intensity in hypertensive patients at the Rejosari Community Health Center in Pekanbaru.

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## INTRODUCTION

Adulthood is a developmental stage characterized by the attainment of biological, psychological, and social maturity. Globally, the World Health Organization (WHO) reports that approximately 1.28 billion adults aged 30–79 years live with hypertension, and more than 9.5 million deaths annually are directly linked to this condition and its complications (WHO, 2023).

Based on medical diagnoses across adult age groups, the prevalence of hypertension in Indonesia reaches approximately 46% of the total adult population. The distribution of hypertension cases by age group shows an increase with advancing age: 2,448 cases in the 25–34 age group, 6,565 cases in the 35–44 group, 12,935 cases in the 45–54 group, and 14,562 cases in the 55–64 group. This pattern confirms that the risk of hypertension rises progressively from adulthood through to old age (Kementerian Kesehatan Republik Indonesia, 2023).

At the regional level, Riau Province also exhibits a relatively high hypertension prevalence of 33.1%. Among the twelve regencies and cities in Riau Province, Pekanbaru City records a hypertension prevalence of 21.1%. The age group with the highest number of hypertension sufferers is the 45–54 range, with over 892 cases, followed by the 55–59 age group with more than 746 cases, and the 60–69 age group with over 728 cases (Riau Province Health Office, 2022).

Specifically, the highest prevalence of hypertension in Pekanbaru City was recorded at the Rejosari Community Health Center (Puskesmas), with a total of 4,464 cases in 2024 (Pekanbaru City Health Office, 2024). This high figure highlights the need for more intensive promotive and preventive efforts at the primary healthcare level.

Hypertension is known as a "silent killer" because it often develops without distinctive symptoms, which can vary from person to person. Nevertheless, hypertensive patients frequently report certain clinical complaints, including headaches or a sensation of heaviness in the back of the neck, easy fatigability, palpitations, tinnitus (ringing in the ears), visual disturbances, and epistaxis. Among these various manifestations, headache is the symptom most commonly observed in patients with hypertension (Fresia, 2021).

Headache is defined as a sensation of pain or discomfort felt in part or all of the head; in some cases, this pain may radiate to the face, the orbital region, the lower jaw, and even the neck. This condition can disrupt daily activities and diminish the individual's quality of life (Fauziah, 2021).

In general, headache management is categorized into two primary approaches: pharmacological therapy and non-pharmacological therapy. Slow Stroke Back Massage (SSBM) is a non-pharmacological technique that is both simple and easy to implement. This technique promotes relaxation, enhances comfort, alleviates muscle tension, and improves blood circulation. The mechanism of action of SSBM differs from other non-pharmacological methods because the tactile stimulation provided triggers the release of endorphins, which play a role in inhibiting the transmission of pain signals to the central nervous system (Widyastuti et al., 2018).

The effectiveness of SSBM in reducing headaches among hypertensive patients has been demonstrated through various studies. A study conducted by Sormin et al. (2021) showed that the application of the SSBM technique significantly reduced headache intensity in individuals with hypertension. Consistent with these findings, research by Istyawati (2020) – titled "The Effectiveness of Slow Stroke Back Massage (SSBM) in Reducing Headache Pain Scales in Hypertensive Patients at Mitra Siaga Tegal Hospital" – also concluded that SSBM therapy has a significant impact on reducing headache pain scales in patients with hypertension.

A preliminary study conducted at the Rejosari Community Health Center (Puskesmas) in Pekanbaru on May 9, 2025, revealed a total of 2,809 cases of adult hypertension in 2024. Between January and April 2025, 887 cases of hypertension were recorded. Interviews with ten adult patients undergoing hypertension treatment at the center showed that nine experienced headaches, while one was asymptomatic. Among the nine patients with symptoms, two reported pain relief through head massage, one reported relief from using herbal supplements, and the remaining six relied solely on pharmacological medications from the health center and pharmacies to manage their headaches.

The preliminary study findings indicate that nine out of ten adult patients with hypertension suffer from headaches. This high prevalence suggests that headaches are a common clinical issue with the potential to affect patients' comfort and quality of life. Previous studies have demonstrated that Slow Stroke Back Massage (SSBM) is a non-pharmacological intervention capable of reducing headache intensity in hypertensive patients. However, existing research on SSBM for headache reduction in this population faces limitations, such as diverse respondent characteristics and the logistical demands of door-to-door study implementation, which require significant time, duration, and frequency of intervention delivery. This study aims to examine the effect of Slow Stroke Back Massage therapy on reducing headache intensity among hypertensive patients at the Rejosari Community Health Center in Pekanbaru.

## LITERATURE REVIEW

According to the *Kamus Besar Bahasa Indonesia* (KBBI), adulthood is defined as the state in which a person has reached physical maturity and is no longer in the childhood or adolescent phase. The term "adulthood" is often associated with achieving a level of maturity that encompasses various developmental aspects—such as physical, psychological, and biological factors, as well as mindset, judgment capabilities, and an individual's perspective on their environment and life. Furthermore, the concept of independence is a crucial component of adulthood, referring to an individual's ability to resolve problems autonomously without excessive reliance on others. The process of reaching this state is known as "maturation"—a series of efforts and developmental stages that guide an individual toward a more mature state in terms of both age and social role functions (Dewi, 2021). According to E. Hurlock (cited in Jannah, 2017), adulthood is divided into three periods:

- 1 Young Adults: 18 to 40 years old
- 2 Middle Adults: 40 to 60 years old
- 3 Older Adults: 60 years old and above

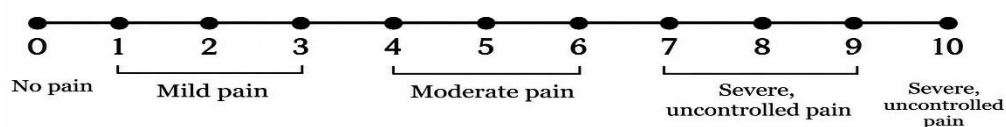
Blood pressure is the force exerted by blood flow against the walls of blood vessels as a result of the heart's pumping activity. Blood pressure reaches its peak value when the heart's ventricles contract—known as systolic pressure—and drops to its lowest value when the ventricles relax—known as diastolic pressure. In certain conditions, such as hypertension, blood pressure rises due to the strong force of blood pumped by the heart through the vessels, thereby placing excessive pressure on the arterial walls (Hasnawati, 2021).

Table 1. Blood Pressure Classification

| Blood Pressure Classification | Systolic Blood Pressure | Diastolic Blood Pressure |
|-------------------------------|-------------------------|--------------------------|
| Normal                        | 120mmHg-129 mmHg        | 80-89 mmHg               |
| High-Normal                   | 130 mmHg -139 mmHg      | 89 mmHg                  |
| Grade 1 Hypertension          | 140 mmHg -159 mmHg      | 90 - 99 mmHg             |
| Grade 2 Hypertension          | > 160 mmHg              | > 100 mmHg               |
| Grade 3 Hypertension          | > 180 mmHg              | > 110 mmHg               |

Hypertension is a clinical condition that often presents without specific or characteristic symptoms; in some patients, it may even progress without significant complaints. Consequently, hypertension is frequently referred to as a "silent disease." When symptoms do appear, they are generally associated with elevated blood pressure and vary among individuals; these may include headaches – sometimes accompanied by nausea and vomiting due to increased intracranial pressure – vertigo, fatigue, visual disturbances, tinnitus, epistaxis (nosebleeds), palpitations, heightened stress, stroke, and nocturia (Marhabatsar & Sijid, 2021).

Headache is one of the most common complaints among patients with hypertension. The mechanism underlying these headaches begins with a stimulus – whether biological, chemical, or thermal – that activates nociceptors in peripheral tissues. This stimulus is then transmitted via afferent fibers to the spinal cord, entering through the dorsal horn and synapsing in the substantia gelatinosa before being relayed through the spinothalamic tract. Subsequently, pain impulses diverge into two pathways: one leading to the reticular formation, producing a sensation of slow pain, and another leading directly to the thalamus, triggering fast pain. Furthermore, in hypertensive patients, headaches are linked to structural and functional changes in blood vessels; elevated blood pressure can cause vasoconstriction and increased cerebral vascular resistance, thereby disrupting cerebral blood flow and triggering increased pressure and pain signaling, which results in headaches (Murtiono & Ngurah, 2020). Headache intensity is measured using the Numeric Rating Scale, as follows:



Gambar 1 Skala Numerik

The Numerical Rating Scale is a tool used to measure pain intensity on a scale of 0 to 10.

- 0 : No pain
- 1-3 : Mild pain
- 4-6 : Moderate pain
- 7-9 : Severe, controlled pain
- 10 : Severe, uncontrolled pain

Slow Stroke Back Massage (SSBM) is a non-pharmacological therapy used to reduce the pain intensity experienced by patients. This therapy involves stimulating the skin's superficial nerves; the signal is then transmitted to the hypothalamus in the brain, triggering the release of endorphins (Purba & Ginting, 2022).

SSBM employs gentle, stroking massage techniques on the back to provide comfort, alleviate tension, induce calmness, and improve blood circulation. The technique facilitates endorphin release, thereby limiting and reducing pain stimuli (Fatimah, 2020).

SSBM is indicated for clients experiencing increased pain intensity, anxiety, stiffness, muscle tension in the back and shoulder areas, sleep disturbances, and fatigue. The therapy aims to enhance overall comfort and bodily relaxation. However, there are certain contraindications for SSBM. It is not recommended for clients with rib or vertebral fractures, burns on the back, severe bruising, skin rashes, skin inflammation, or open wounds. Performing SSBM in such conditions carries the risk of worsening injuries or causing further complications (Kusumoningtyas & Ratnawati, 2018).

## METHOD

This study employs a quantitative approach with a pre-experimental design, specifically a one-group pre-test post-test design. This design is used to assess changes in headache intensity among hypertensive patients before and after the administration of Slow Stroke Back Massage (SSBM) therapy by conducting an initial measurement (pre-test) prior to the intervention and a follow-up measurement (post-test) after the intervention. The study was conducted from July to August 2025 within the service area of the Rejosari Community Health Center (Puskesmas Rejosari) –located on Jalan Utama, Rejosari, Tenayan Raya District, Pekanbaru City –involving a total population of 887 hypertensive patients. Sample size determination utilized the Lemeshow formula, based on the methodology used in a previous study by Susi Winda (2023).

$$\begin{aligned}
 n &= \left[ \frac{(z\alpha + z\beta)S}{X1 - X2} \right]^2 \\
 n &= \left[ \frac{(1,96 + 1,645)795}{0,10 - 0,63} \right]^2 \\
 n &= \left[ \frac{(3,605)795}{-0,53} \right]^2 \\
 n &= \left[ \frac{2,865}{-0,53} \right]^2 \\
 n &= [-5,405]^2 \\
 n &= 29,21 = 29
 \end{aligned}$$

### Legend:

|            |                                               |
|------------|-----------------------------------------------|
| n          | : number of samples studied                   |
| Z $\alpha$ | : Z-value at a 95% confidence level (1.96)    |
| Z $\beta$  | : Standard normal deviate for $\beta$ (1.645) |
| S          | : Standard deviation (0.795)                  |
| X1X2       | : Mean difference (-0.53)                     |

Based on the formula above, a sample size of 29 respondents was obtained. This study employed a non-probability sampling technique and was conducted at the Rejosari Community Health Center (Puskesmas) in Pekanbaru, adhering to the following inclusion and exclusion criteria:

#### 1 Inclusion Criteria

- Respondents willing to participate in the study by signing the informed consent form.
- Adult female patients diagnosed with high-normal blood pressure, Grade 1 hypertension, or Grade 2 hypertension who are registered at the Rejosari Community Health Center, Pekanbaru.

- c. Respondents experiencing headaches with mild to moderate pain intensity
  - d. Respondents classified as having tension-type headaches.
- 2 Exclusion Criteria
- a. Respondents unwilling to participate in the study.
  - b. Respondents who did not complete the Slow Stroke Back Massage therapy intervention.
  - c. Patients with impaired consciousness or limited motor function.
  - d. Patients experiencing severe headache intensity.
  - e. Patients classified as having Grade 3 hypertension.
  - f. Patients with contraindications to Slow Stroke Back Massage therapy, such as bone fractures, burns, skin rashes, or open wounds on the back.

The instruments used in this study consisted of an observation sheet and a Numeric Rating Scale (NRS) to measure headache intensity on a scale of 0–10. A score of 0 indicates no pain; 1–3 indicates mild pain; 4–6 indicates moderate pain; 7–9 indicates controlled severe pain; and 10 indicates uncontrolled severe pain. The NRS offers several advantages over other pain measurement instruments: it is relatively simple, practical, easy to understand, requires little time to administer, and necessitates no special equipment. Compared to the Visual Analog Scale (VAS), the NRS is more practical because respondents simply select a number rather than marking a line that requires subsequent measurement. Meanwhile, unlike the Verbal Rating Scale (VRS), which relies on descriptive categories, the NRS provides a more detailed numerical score range to reflect changes in pain intensity. Consequently, the NRS was deemed more effective for this study, as it facilitated rapid, simple, and consistent measurement of headache intensity both before and after the Slow Stroke Back Massage (SSBM) intervention.

Prior to the study, the researcher explained the objectives, benefits, procedures, and respondent rights, and obtained consent via an informed consent form. Subsequently, the researcher measured headache intensity using the NRS prior to the intervention to establish pre-test data. The intervention was administered twice—once daily over two consecutive days; the 29 respondents were divided into five groups to facilitate scheduling for the door-to-door intervention delivery. Upon completion of the intervention series, headache intensity was measured again using the NRS to obtain post-test data. The collected data were then analyzed. Before hypothesis testing, a normality test was conducted using the Shapiro-Wilk test ( $n < 50$ ). The Shapiro-Wilk test yielded a p-value of 0.001 for the pre-test and 0.004 for the post-test. The normality test results indicate that the pre- and post-intervention headache data are not normally distributed ( $p\text{-value} < 0.05$ ); therefore, a bivariate analysis was conducted using the Wilcoxon Signed-Rank Test.

## RESULTS AND DISCUSSION

The study was conducted within the service area of the Rejosari Community Health Center (Puskesmas), located on Jalan Utama, Rejosari, Tenayan Raya District, Pekanbaru City. Participants consisted of hypertensive patients experiencing headaches who met the established inclusion criteria; a total of 29 respondents took part in the study. Respondents received an intervention in the form of SSBM therapy, administered according to a predetermined procedure.

Prior to the procedure, the researcher prepared the necessary supplies, including a bath blanket, a bath towel, and either olive oil or baby oil. The researcher also ensured a comfortable, quiet environment that maintained the respondents' privacy. Respondents were positioned lying down comfortably, with their backs easily accessible for the massage.

Before administering the therapy, the researcher measured headache intensity using the Numeric Rating Scale (NRS) to establish a baseline (pre-test). Additionally, the researcher assessed the condition of the skin and back area to ensure the absence of contraindications, such as open wounds, burns, skin redness, or injuries/fractures to the ribs and vertebrae. Subsequently, the researcher applied a sufficient amount of olive oil or baby oil to the back area to minimize friction between the hands and the skin during the massage.

The SSBM therapy was administered using stroking (effleurage) techniques that were gentle, slow, rhythmic, and continuous. Massage movements were performed using the palms with light to moderate pressure, tailored to the respondent's tolerance and comfort. The movements began at the lower back and proceeded upward toward the shoulder area, after which the hands slowly returned to the starting position. These movements were repeated using a steady, unhurried rhythm.

In the subsequent step, the researcher used both palms to stroke the right and left sides of the back. The strokes were performed lengthwise along the back muscles, followed by gentle circular movements over the back or shoulder areas. These movements were executed symmetrically on both sides of the back, maintaining gentle pressure throughout. During the massage, the researcher maintained a consistent rhythm to promote relaxation and comfort for the respondent.

Throughout the therapy session, the researcher monitored the respondent's responses and comfort level. Once the therapy concluded, any residual oil was wiped from the back, and the respondent was assisted into a comfortable position. Finally, the headache intensity was re-measured using the Numeric Rating Scale (NRS) to assess the outcome following the SSBM therapy (post-test).

**Table 1.** Frequency Distribution of Characteristics of Hypertensive Patients (N= 29)

| Characteristics | Categories       | Frequency | Percentage (%) |
|-----------------|------------------|-----------|----------------|
| Age             | Young Adulthood  | 5         | 17             |
|                 | Middle Adulthood | 13        | 45             |
|                 | Late Adulthood   | 11        | 38             |
| Gender          | Male             | 0         | 0              |
|                 | Female           | 29        | 100            |

The Table 1 above shows that the majority of the 29 hypertensive patients with headaches were middle-aged (48%), and all the respondents studied were female.

**Table 2.** The Description of Hypertension Classification and Headache Intensity Prior to SSBM Therapy (Pre-and-post-test) (N=29)

| Characteristics              | Categories           | Frequency | Percentage (%) |
|------------------------------|----------------------|-----------|----------------|
| Hypertension Classification  | Grade 1 Hypertension | 25        | 86.2           |
|                              | Grade 2 Hypertension | 4         | 13.8           |
|                              | Late Adulthood       | 11        | 38.0           |
| Pre-intervention Pain Scale  | No Pain              | 0         | 0              |
|                              | Mild Pain            | 7         | 24.1           |
|                              | Moderate Pain        | 22        | 75.9           |
| Post-intervention Pain Scale | No Pain              | 5         | 17.2           |
|                              | Mild Pain            | 20        | 69.0           |
|                              | Moderate Pain        | 4         | 13.8           |

Table 2 shows the distribution of hypertension classification and headache intensity among 29 participants before and after SSBM therapy. Prior to the intervention, the majority of participants had Grade 1 hypertension (25 participants; 86.2%), while 4 participants (13.8%) had Grade 2 hypertension.

Regarding headache intensity, before SSBM therapy, most participants experienced moderate pain (22 participants; 75.9%), while 7 participants (24.1%) reported mild pain. No participants reported an absence of pain before the intervention.

Following SSBM therapy, the distribution of headache intensity shifted toward lower pain levels. The proportion of participants reporting moderate pain decreased from 75.9% to 13.8%, while those experiencing mild pain increased from 24.1% to 69.0%. In addition, 17.2% of participants reported no pain after the intervention, compared with none at baseline. These findings indicate a descriptive reduction in headache intensity following SSBM therapy, with most participants shifting from moderate to mild or no pain.

**Table 3.** Normality Test Before and After SSBM Therapy Intervention

| <i>Test Of Normality Shapiro Wilk</i> |            |    |      |
|---------------------------------------|------------|----|------|
| Data Type                             | Statistics | Df | Sig. |
| Pre-Headache                          | ,864       | 29 | ,001 |
| Post-Headache                         | ,864       | 29 | ,004 |

Based on Table 3, the Shapiro-Wilk normality test results yielded a p-value of 0.001 for the pre-test and 0.004 for the post-test. These results indicate that the pre- and post-test headache data were not normally distributed ( $p\text{-value} < 0.05$ ); therefore, a bivariate analysis was conducted using the Wilcoxon Signed-Rank Test.

**Table 4.** Wilcoxon Test of Headache Intensity in Patients with Hypertension

| Headache Intensity | N  | Mean | Median | SD    | Minimum | Maximum | P-Value |
|--------------------|----|------|--------|-------|---------|---------|---------|
| Pre-headache       | 29 | 4,48 | 5      | 1,056 | 3       | 6       | ,000    |
| Post-headache      | 29 | 2,17 | 2      | 1,311 | 0       | 4       |         |

Statistical analysis using the Wilcoxon signed-rank test yielded a p-value of 0.000 (with  $\alpha = 0.05$ ). Since the p-value was less than  $\alpha$ , the null hypothesis ( $H_0$ ) was rejected and the alternative hypothesis ( $H_a$ ) was accepted, indicating that slow-stroke back massage therapy has an effect on reducing headache intensity in patients with hypertension at the Rejosari Community Health Center (Puskesmas) in Pekanbaru.

### Headache Intensity Prior to Slow Stroke Back Massage (SSBM) Therapy

Research results indicate that among the 29 respondents, the majority experienced moderate headaches prior to undergoing SSBM therapy. This finding aligns with the study by Mahfuzah et al. (2023), which showed that before SSBM therapy, all 12 respondents (100%) were suffering from moderate headaches. Such findings highlight a concerning level of headache-related distress for the sufferers. Headaches associated with hypertension cause significant discomfort and are highly disruptive. These symptoms arise from increased pressure within the cerebral blood vessels, which triggers stretching or irritation of the vessel walls and surrounding tissues.

A study by Damawiyah & Kamariyah (2022) found that, among 15 hypertensive patients, the majority (60%) experienced moderate headache intensity prior to SSBM therapy. This indicates that the respondents' average pain level before the SSBM intervention fell within the moderate range. The headaches experienced by respondents

can impact daily activities, leading to feelings of lethargy and listlessness, as well as emotional instability.

Another study by Adrianto et al. (2025) reported that, regarding the frequency distribution of headache levels among elderly hypertensive patients prior to SSBM therapy, the entire cohort of respondents (100%) experienced moderate pain. These findings signify that headaches represent a serious issue requiring immediate attention, as they significantly impact both the quality and quantity of life for those affected.

According to Brunner & Suddarth (2018), patients with hypertension frequently complain of headaches, particularly at the back of the head. This is caused by increased cerebral vascular pressure resulting from high blood pressure. A headache is a sensation of pain or discomfort in the head, scalp, or upper neck region that can stem from various factors—either primary (without an organic cause) or secondary (resulting from another disease). Headaches associated with hypertension are often excruciating, characterized by a sensation of pressure (throbbing or stabbing), dizziness, a feeling of heaviness in the head, nausea, vomiting, visual disturbances, and sleep issues, as well as heightened emotional distress. These headaches can be managed through pharmacological and non-pharmacological therapies; commonly used medications include diuretics and analgesics.

Headaches in hypertensive patients are an issue requiring attention, as their impact varies from person to person. Observations of the respondents in this study revealed that pain levels and pain tolerance varied; while some patients remained able to perform daily activities, those experiencing moderate to severe pain faced limitations regarding activity, rest, and concentration. Persistent pain can increase discomfort, disrupt sleep quality, heighten stress and anxiety, and ultimately diminish the patient's quality of life. Therefore, the management of headaches in hypertensive patients must be precise and comprehensive to prevent complications and support an improved quality of life.

### **Headache Intensity After Slow Stroke Back Massage (SSBM) Therapy**

The study results indicate that, following the administration of SSBM therapy (conducted twice daily for two consecutive days), the majority of the 29 hypertensive respondents reported a headache intensity of 1–3, classified as mild pain. This finding aligns with the study by Nurman et al. (2024) regarding the effect of the SSBM technique on reducing headaches and blood pressure in elderly patients with hypertension in Batu Belah Village (within the Air Tiris Community Health Center service area), which showed a 71.7% frequency distribution of mild pain following SSBM therapy. These results suggest that SSBM therapy is capable of lowering headache levels in hypertensive patients. This occurs because SSBM therapy involves applying strokes to the skin of the back, thereby stimulating superficial nerves; these signals are transmitted to the brain, triggering the release of endorphins.

These findings are also consistent with the study by Putri et al. (2025), which demonstrated the effectiveness of SSBM therapy in reducing headaches among elderly hypertensive patients in Sari Galuh Village; the study showed that 100% of the respondents experienced mild pain after the therapy was administered. SSBM therapy proves effective in managing hypertensive headache symptoms through the application of gentle touch to the skin of the back.

Slow Stroke Back Massage (SSBM) is a form of touch therapy utilized in nursing practice to induce physical and psychological relaxation. According to Potter & Perry (2021) in *Fundamentals of Nursing*, Slow Stroke Back Massage (SSBM) is a form of non-pharmacological nursing intervention involving gentle, slow, and rhythmic movements on the back. It aims to induce relaxation and reduce muscle tension; the therapy utilizes gentle massage to stimulate tactile nerve receptors, which transmit impulses to the central nervous

*The Effect of Slow Stroke Back Massage Therapy on Reducing Headache Intensity in Patients with Hypertension at Rejosari Community Health Center, Pekanbaru (Nurasyikin, et al.)*

system and activate the parasympathetic nervous system. This activation triggers physiological responses – such as lowered heart rate and blood pressure, muscle relaxation, and a sense of calm and comfort – thereby helping to improve blood circulation, reduce stress, enhance sleep quality, and decrease pain perception by boosting the body's release of natural endorphins.

In this study, persistent high blood pressure is hypothesized to contribute to the onset of headaches in hypertensive patients through increased sympathetic nervous system activity and alterations in vascular tone. Such conditions can affect the regulation of cerebral blood flow and heighten vascular responsiveness, thereby stimulating pain receptors and ultimately leading to headaches. Sustained high blood pressure can also increase muscle tension – particularly in the neck and back which exacerbates the pain perceived by the patient.

Administering Slow Stroke Back Massage (SSBM) consistently over two consecutive days provides stimulation through gentle touch and massage on the back. This stimulation activates nerve fibers – specifically A-beta fibers – which play a role in pain modulation mechanisms. Activation of these fibers can inhibit the transmission of pain impulses from nociceptive fibers to the central nervous system, thereby reducing the pain stimuli received and perceived by the brain. This aligns with the study findings showing that patients experienced a reduction in headache complaints following SSBM therapy. Beyond its effects on pain modulation, SSBM – applied via slow, rhythmic massage strokes on the back – induces a state of relaxation that can lower sympathetic nervous system activity and enhance parasympathetic dominance. This relaxation response helps alleviate muscle tension, improves patient comfort, and supports a reduction in heart rate and blood pressure. Relaxing the back and neck muscles also mitigates muscle tension and reduces excessive nerve stimulation, thereby diminishing the perception of pain. Thus, the study results indicate that SSBM serves as a valuable non-pharmacological intervention for reducing headache intensity in hypertensive patients.

### **The Effect of Slow Stroke Back Massage (SSBM) Therapy on Reducing Headache Intensity in Patients with Hypertension**

The study results indicate that SSBM therapy influences the reduction of headache intensity in patients with hypertension, with median values of 5 for the pre-test and 2 for the post-test. The Wilcoxon Signed-Rank Test yielded a significant p-value of 0.000 ( $p < 0.05$ ), signifying a significant effect of SSBM therapy on reducing headache intensity associated with hypertension.

This aligns with research conducted by Surya & Yusri (2022), which found median headache intensity scores of 4 (pre-therapy) and 3 (post-therapy), demonstrating a reduction in intensity following SSBM therapy. Statistical analysis showed a p-value of 0.000 ( $p < 0.05$ ), leading to the rejection of the null hypothesis ( $H_0$ ) and the acceptance of the alternative hypothesis ( $H_a$ ); this confirms the effect of SSBM therapy on headache levels in hypertension patients.

This study is also supported by research from Istyawati et al. (2020), which employed a pre-experimental design – specifically a one-group pre-test/post-test design. The results revealed a significant difference in median headache intensity scores before and after SSBM therapy (6 pre-test vs. 5 post-test) with a p-value of 0.000 ( $p < 0.05$ ). This indicates that SSBM therapy is effective in reducing headache intensity in patients with hypertension. SSBM is a massage therapy that focuses on gentle touch applied to the back.

Another study by Araujo & Indawati (2024) examined the effect of back massage therapy on headache reduction in hypertensive patients. Their findings showed median

headache intensity scores of 4 (pre-test) and 2 (post-test) following SSBM therapy. The Wilcoxon Signed-Rank Test yielded a p-value of 0.000 ( $p < 0.05$ ), resulting in the acceptance of the alternative hypothesis ( $H_a$ ) and confirming a significant difference between the pre-test and post-test groups.

This finding is supported by research conducted by Rahmawati & Hidayah (2023), which showed that the median headache intensity score was 4 prior to SSBM therapy and decreased to 2 following the intervention. Statistical analysis yielded a p-value of 0.001 ( $p < 0.05$ ), indicating a significant difference between the conditions before and after the SSBM intervention.

Furthermore, research conducted by Wijaya & Kurniawati (2024) on the effect of back massage therapy on headaches in hypertensive patients showed a median headache score of 5 (pre-test), which decreased to 2 (post-test). The Wilcoxon Signed-Rank Test yielded a p-value of 0.000 ( $< 0.05$ ), leading to the conclusion that SSBM therapy has a significant effect on reducing headache intensity in hypertensive patients.

SSBM therapy is an effective form of therapeutic exercise for reducing headache intensity. This therapy operates through a back-stroking mechanism that influences the autonomic nervous system, triggering a relaxation response and alleviating pain via the release of endorphins; this process interrupts the transmission of pain signals, thereby reducing headaches in hypertensive patients (Damawiyah & Kamariyah, 2022).

Slow Stroke Back Massage (SSBM) is a non-pharmacological nursing intervention used to promote relaxation, lower stress levels, and help alleviate pain. The intervention in this study involves gentle, slow, and rhythmic stroking movements across the back, providing sensory stimulation while creating a calming effect and enhancing patient comfort. The tactile stimulation provided during therapy is transmitted via the sensory nervous system and plays a role in pain modulation mechanisms, thereby reducing the perception of painful stimuli.

Administering SSBM also helps elicit a relaxation response by influencing the autonomic nervous system. This state of relaxation helps reduce muscle tension and stress responses while increasing comfort for hypertensive patients suffering from headaches; the reduction in muscle tension and the promotion of relaxation contribute to a decreased perception of pain. Additionally, the massage stimulation supports the body's natural analgesic mechanisms—including the release of endorphins—which inhibit pain perception. Reducing the stress response also helps alleviate physical tension that could otherwise exacerbate headache symptoms.

In this study, this mechanism may explain the reduction in headache intensity observed following SSBM therapy. Respondents receiving gentle, rhythmic massage stimulation during the intervention likely experienced greater relaxation, resulting in reduced muscle tension and a diminished response to pain stimuli. Consequently, the decrease in pain intensity observed in the study results can be understood not merely as a change in pain scores, but as a reflection of the patients' physiological and psychological responses to the SSBM intervention. The combined effects of relaxation, sensory stimulation, reduced muscle tension, and the modulation of pain perception are believed to contribute to the alleviation of headaches in hypertensive patients.

However, this study has certain limitations; the absence of a control group prevented a direct comparison of pain intensity changes between respondents receiving Slow Stroke Back Massage (SSBM) and those who did not receive the intervention. The study was also susceptible to measurement bias, as pain intensity was assessed based on the respondents' subjective perceptions using a pain scale. Each respondent possessed a unique ability to evaluate and articulate their perceived pain intensity. Factors such as emotional state, anxiety, comfort levels, fatigue, and the respondent's attentiveness at the

time of measurement could influence their pain scale ratings. Furthermore, there was a possibility of confounding factors that the researchers could not fully control, such as fluctuations in blood pressure, sleep quality, physical activity, and psychological state. SSBM therapy is also highly dependent on the specific condition and response of each respondent; variations in comfort levels, touch tolerance, physical condition, and individual responses during the therapy could lead to differing intervention outcomes among participants. These factors can directly or indirectly influence headache intensity, thereby contributing to the observed changes in pain scores following the intervention.

## CONCLUSION

Based on the study regarding the effect of slow-stroke back massage (SSBM) therapy on reducing headache intensity in patients with hypertension at the Rejosari Community Health Center (Puskesmas) in Pekanbaru, it can be concluded that prior to the therapy, the majority (75.9%) of the 29 respondents experienced moderate headache intensity, whereas after the therapy, the majority (69.0%) experienced mild headache intensity. Regarding hypertension classification, the vast majority (86.2%) of the 29 respondents suffering from headaches fell into the Grade 1 hypertension category. Statistical analysis demonstrated that SSBM therapy had an effect on reducing headache intensity associated with hypertension at the Rejosari Community Health Center, with the Wilcoxon test yielding a p-value of 0.000 ( $p < 0.05$ ).

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