



Slow Stroke Back Massage Therapy to Reduce Acute Pain in Elderly with Hypertension: A Case Study

Yessi Eka Safitri^{1*}, Latifa Aini Susumaningrum²,
Fahrudin Kurdi², Achmad Ali Basri³

1 Faculty of Nursing, University of Jember, Indonesia

2 Department of Community, Family and Gerontic Nursing, Faculty of Nursing, University of Jember, Indonesia

3 Faculty of Health Sciences, University of Dr. Soebandi, Indonesia

Article History

Submitted: 08-02-2023

Revised: 16-04-2023

Accepted: 28-04-2023

doi.org/10.58545/jkki.v3i2.54

Copyright (c) 2023
Yessi Eka Safitri

This is an open-access article under the CC-BY-SA License.



Abstract

Background: Hypertension causes increased vascularization of blood vessels to the brain. This condition will affect the pressure on the nerve fibers in the neck muscles, so that the patient will feel discomfort in the head and nape. The incidence of acute pain in hypertensive patients at the Babelan I Health Center in 2022, namely patients with hypertension who experience moderate acute pain (scale 4-6 NRS) is as many as 16 people (64%). **Purpose:** Knowing the application of SSBM therapy to reducing acute pain in the elderly with hypertension at Melati room in UPT PSTW (nursing home) Jember. **Method:** This final scientific work uses the case report method which describes the case of Mrs. J with acute pain nursing problems. Nursing care was provided comprehensively for 6 sessions with 10 minutes for each meeting from 29 September to 05 October 2022. **Results:** After being given nursing care with SSBM intervention, it was found that there was a decrease in the client's pain level in terms of decreased pain complaints, the average pain scale was from 4.7 NRS to 3.8 NRS, the average systolic blood pressure was 151.7 mmHg to 141.7 mm Hg, and the average blood pressure was 96.7 mm Hg to 87.5 mm Hg. **Conclusion:** 6 sessions of SSBM therapy with a duration of 10 minutes can have a positive effect on acute pain problems. Health workers are expected to use SSBM therapy in combination with other non-pharmacological therapies to reduce scale pain.

Keywords: Slow Stroke Back Massage, Pain, Elderly, Hypertension

Correspondence

Yessi Eka Safitri

Faculty of Nursing, Universitas Jember, Indonesia

Jl. Kalimantan No.37, Kec. Sumbersari, Kabupaten Jember, Jawa Timur 68121

email: yessiekasafitri0102@gmail.com

How to cite:

Safitri, Y.E., Susumaningrum, L.A., Kurdi, F., & Basri, A.A. (2023). Slow Stroke Back Massage Therapy to Reduce Acute Pain in Elderly with Hypertension: A Case Study. *Jurnal Kesehatan Komunitas Indonesia*, 3(2), 240–252. <https://doi.org/10.58545/jkki.v3i2.54>

1. BACKGROUND

A person is said to be elderly if he has reached the age of more than or equal to 60 (sixty) years. As a person ages, they will experience various changes in conditions due to degenerative processes in both

physical, spiritual, psychological, economic and social aspects (Ministry of Health of the Republic of Indonesia, 2016). Data on disease patterns in the elderly group was reported by Basic Health Research (RISKESDAS) in 2013, where the

majority of elderly people experienced health problems, one of which was hypertension. Common symptoms commonly experienced by people with hypertension are acute pain in the back of the head and neck. An increase in blood pressure causes the vascularization of blood vessels to the brain to also increase, which will affect the pressure on the nerve fibers of the neck muscles, so that sufferers will feel discomfort in the head and nape of the neck (Nugroho et al., 2022). One of the incidents of acute pain in hypertensive patients was found at the Babelan I Community Health Center in 2022, namely 16 patients with hypertension who experienced moderate acute pain (4-6 NRS scale) (Mustarifah & Indiwati, 2022).

Elevated blood pressure is the main cause of death globally, accounting for 10.4 million deaths per year due to hypertension. When reviewing global figures, it is estimated that 1.39 billion people suffered from hypertension in 2010. Blood pressure trends show clear differences between high to low income areas, namely an estimated 349 million with hypertension in High Income Countries (HIC) and 1.04 billion in Low-Middle Income Country (LMIC) (Mills et al., 2016). The number of people aged 30-79 years with hypertension doubled from 1990 to 2019, from 331 million women and 317

million men with hypertension in 1990 to 626 million women and 652 million men with hypertension in 2019 (NCD-RisC, 2021). Cases of hypertension in Indonesia can also be said to be high. The results of blood pressure measurements in 2017 by the Directorate General of Control and Prevention of Non-Communicable Diseases showed that 1 in 3 adults had increased high blood pressure or were taking anti-hypertension drugs. It was also seen that 1 in 10 adults found out for the first time that they had increased blood pressure, 1 in 6 adults took anti-hypertension medication, and 1 in 2 adults on hypertension medication still had blood pressure >140/90 mmHg (RI Ministry of Health, 2018). If the incidence of hypertension in Jember Regency is highlighted, there are 741,735 people suffering from hypertension, of which 190,979 people (25.75%) have received health services at the Community Health Center according to standards (Jember Health Office, 2020).

Giving a back massage or Slow Stroke Back Massage can be an alternative to provide body relaxation, increase levels of endorphin hormones to provide a relaxing effect, and reduce the hormones cortisol, norepinephrine and dopamine. The effect of SSBM showed an average decrease in systolic blood pressure of 10

mmHg after therapy and the pain scale decreased from 1 to 0 on the third day (Suwaryo et al., 2022). The effect of SSBM is known to have better effectiveness compared to music therapy in reducing pain (Safitri, 2017). Likewise, a comparison between SSBM which uses the effleurage technique is considered to provide more of a relaxing effect to reduce pain than providing deep breathing relaxation therapy (Fitriana & Vidayanti, 2019). The efforts that have been made by UPT PSTW (nursing home) Jember to deal with the problem of acute pain in the elderly due to hypertension is by providing pharmacological therapy if clients complain of pain. Apart from that, the diet pattern is also not applied to the elderly, where all elderly people are provided with the same food and drinks without paying attention to diet according to their health condition.

Based on the results of a study conducted on September 26 2022 at Melati room in UPT PSTW (nursing home) Jember, the results showed that 11 out of 20 elderly people (55%) had high blood pressure, namely 2 elderly people with pre-hypertension and 9 elderly people with hypertension. One of the cases taken was the client Mrs. J (90 years old) was found to have an acute pain problem (D.0077). The focus data found was that clients

complained that they often felt dizzy and their vision became blurry and spinning. The client also said that in the last three months he had fallen in the bathroom due to a headache. Pain assessment obtained P: high blood pressure, Q: dull, R: head and neck, S: 6 NRS, and T: intermittent. The results of the TTV examination showed that the client's blood pressure, Mrs. J 170/100 mmHg, pulse 72 x/minute, SpO₂ 98%, temperature 36.7 C, and RR 20 x/minute. Thus, researcher was interested to applying SSBM therapy to reduce acute pain in Mrs. J with hypertension at Melati room in UPT PSTW (nursing home) Jember.

2. METHODS

The method used in this study was an experimental observational approach with a one group pre-post test design in which the researcher took a managed case on a 90 year old client at Melati room in UPT PSTW (nursing home) Jember. Case selection is based on the results of a comprehensive assessment of one homestead. Clients are assessed comprehensively and head to toe physically, psychologically and spiritually using a gerontic nursing assessment format. Implementation mechanism for clients. Client Mrs. J is an assessment of client complaints, examination of TTV (blood pressure, pulse rate, SpO₂,

respiratory rate, and temperature), and assessment of pain. After that, SSBM (SSBM) intervention was carried out with a duration of 10 minutes per meeting for a total of 6 meetings. The techniques used in SSBM therapy include alternating hand movements, squeezing, circularity, efflorescence, petrification, and brushing techniques. Each movement is carried out starting from the sacrum towards the cervix with 10 repetitions. After 10 minutes of SSBM therapy, another examination was carried out to evaluate the client's complaints, TTV and pain. The results obtained are then documented in an integrated patient progress note and monitoring sheet.

Blood pressure

Table 1. Measuring Pre and Post SSBM Blood Pressure in patient

Sesion	Pre SSBM		Post SSBM	
	Systolic (mmHg)	Diastolic (mmHg)	Systolic (mmHg)	Diastolic (mmHg)
1 st	170	100	160	95
2 nd	150	100	140	90
3 rd	140	100	135	90
4 th	150	100	130	90
5 th	160	100	150	80
6 th	140	80	135	80

Table 2. Mean Pre and Post SSBM Blood Pressure in in patient

	Mean Systolic (mmHg)	Mean Diastolic (mmHg)	Min	Max
Pre SSBM	151,7	96,7	140/80	170/100
Post SSBM	141,7	87,5	130/80	160/95

3. RESULTS

The results of this research obtained data related to client characteristics, namely the client Mrs. J is 90 years old with a long history of hypertension. The client consumes 7 grams of coffee and salt/day. When conducting a focused assessment, the client complained of pain in the back of the head and neck with a scale of 6 on the NRS. The pain felt is dull or severe and comes and goes. The client also said he had difficulty starting to sleep with a duration of ±5 hours in 24 hours accompanied by a feeling of weakness when he woke up. In the non-verbal assessment, it was found that the client looked restless and had a grimacing facial expression. Based on these data, the main nursing problem raised was acute pain (D.0077).

In table 2 it is known that the average systolic blood pressure before SSBM was 151.7 mmHg and changed after SSBM,

which was 141.7 mmHg. Likewise, there was a decrease in diastolic blood pressure from 96.7 mmHg to 87.5 mmHg.

Pain Scale

Table 3. Pre and Post SSBM Pain Scale Values in patient

Sesion	Pain Scale	
	Pre SSBM (NRS)	Post SSBM (NRS)
1 st	6	4
2 nd	5	4
3 rd	4	4
4 th	4	4
5 th	5	4
6 th	4	3

Table 4. Mean Pre and Post SSBM Pain in patient

SSBM	Mean	Min	Max
Pre SSBM	4,7	4	6
Post SSBM	3,8	3	4

In table 4 above it is known that the average pain scale before SSBM was 4.7 NRS with a maximum value of 6 NRS and a minimum NRS. After SSBM, the client's pain scale changed to 3.8 NRS with a maximum value of 4 NRS and a minimum of 3 NRS.

4. DISCUSSION

Analysis of Client Characteristics

The results of the assessment that has been carried out on the client Ny. J obtained data that the client is an elderly 90 years old. The client also said that he had difficulty getting to sleep with a duration of ±5 hours in 24 hours accompanied by weakness when he woke up. This is

influenced by neurophysiological mechanisms and neuroanatomical structures which include the hypothalamus, melatonin, and serotonin. The hypothalamus plays an important role in receiving input from the anterior cingulate cortex, as a pain modulation system, receiving input from the ventromedical nucleus, lateral thalamus, PAG, preoptic nucleus, and lateral septal nucleus. Fibers from the posterior hypothalamus then project to the amygdala, subthalamus, base of the forebrain, limbic region, and the caudal trigeminal nucleus. This mechanism also triggers the Ascending Reticular Activating System (ARAS) in the

brainstem, so that it causes a person to be awake and increase alertness by increasing the production of dopamine, epinephrine and acetylcholine (Rosse et al., 2018).

Another change that occurs in the elderly is that the arteries become stiffer, which causes recoil and reduces the capacity of blood to flow. This condition triggers systolic blood pressure to increase. Several disorders that arise as a result of increasing age, namely disorders of the renin-angiotensin-aldosterone system, glomerulosclerosis, intestinal fibrosis, and increased peripheral plasma concentrations. These disturbances will eventually trigger an increase in blood pressure (hypertension) (Nuraeni, 2019). In line with this theory, Susanti et al. (2020) found that 16 respondents (66.7%) out of 24 respondents with old age (41-65 years) had hypertension, which percentage was considered to be higher than the incidence of hypertension in adults (18-40 years). The same condition was found by Liew et al., (2019) in which 982 (72.8%) of 1349 elderly >60 years had hypertension.

Based on several research results, it is stated that hypertension is more common in women than men. This is related to the menopausal condition that definitely occurs in elderly women. Hormonal changes in menopausal women will experience a decrease in estrogen levels in

the body. The function of the estrogen hormone is to produce High Density Lipoprotein (HDL) which is useful for keeping blood vessels free of fat deposits (Hutagaluh, 2019). Low HDL levels are followed by increased levels of Low-Density Lipoprotein (LDL), so that this condition causes a high risk of developing atherosclerosis which will then clog blood vessels and cause an increase in blood pressure (Rohmawati, 2021). This is supported by Falah's research (2019) which shows that the percentage of women with hypertension is 45%, while men who experience hypertension are only 25%.

Habits or lifestyle also have a relationship with the incidence of hypertension. The client's habit of consuming 7 grams of salt/day exceeds the normal limit which should not exceed 6 grams of salt consumption in the elderly (Setiyorini & Wulandari, 2018). This will trigger the accumulation of fluid in the body because salt has the property of pulling fluid out of the cells, so that the volume of fluid increases and will burden the work of the heart. The relationship between salt consumption patterns and the incidence of hypertension was proven by Purwono et al. (2020) in his research found that there were 22 (78.6%) elderly people at the Gadingrejo Health Center

with hypertension who liked to eat foods high in salt.

Excessive coffee consumption also risks developing hypertension. The caffeine content in coffee will stimulate the release of adrenaline and cortisol. Adenosine, which plays a role in maintaining the elasticity of blood vessels, will be disrupted due to high levels of caffeine consumed. This condition causes blood vessels to experience vasoconstriction, resulting in high blood pressure (Puspita & Fitriani, 2021). Research by Warni et al. (2020) showed that coffee consumption behavior among respondents at the Daya Murni Health Center had a significant relationship with the incidence of hypertension (p value = 0.000).

Analysis of Primary Nursing Diagnoses

The client in this case shows signs and symptoms that indicate the client is experiencing acute pain, namely complaining of pain in the back of the head and nape, looking grimacing in pain due to pain, difficulty getting to sleep, blood pressure 170/100 mmHg, appetite changes, withdrawal and preferring to sleep when pain is felt, and focusing on yourself. Someone who has high blood pressure will generally experience various signs and symptoms. mentioned the symptoms felt by people with hypertension, including

headaches, especially in the back of the head and back of the neck, palpitations, fatigue, tinnitus, nosebleeds, difficulty sleeping, sweating, vertigo, nausea, and blurred vision (Cahyati et al., 2021). Signs of a person experiencing hypertension can also be seen from a systolic blood pressure that is more than 140 mmHg and a diastolic blood pressure of more than 90 mmHg. In this case report, the client Mrs. J felt that he had symptoms, such as headaches from the back of his neck, blurred and spinning vision, difficulty sleeping, and the results of his blood pressure examination at the time of the study showed 170/100 mmHg. Signs that appear and symptoms felt by the client Mrs. J has indicated that the client has hypertension. Clients feel uncomfortable, especially when they have a headache until their eyes are spinning. Headaches are associated with acute pain which in cases of hypertension pain is caused by vasoconstriction of blood vessels, so that the pressure on the cerebral vessels becomes high.

Nursing Intervention Analysis

In this case the client with the main nursing problem of acute pain was given pain management interventions (I.08238) which included observation, therapeutic, educational, and collaborative actions. . Non-pharmacological therapy given to

clients is SSBM (SSBM) which is cutaneous stimulation to provide a relaxing effect and help reduce the client's pain scale due to high blood pressure. As research conducted by Ni Luh Seri Astuti et al. (2022) showed changes in systolic and diastolic blood pressure in the elderly after SSBM was carried out using the effleurage technique, namely systolic blood pressure before the intervention was 153.5 mmHg to 131.1 mmHg after the intervention. Likewise, diastolic blood pressure decreased from 92.9 mmHg to 81.8 mmHg after the SSBM intervention. The effect of SSBM is known to have better effectiveness compared to music therapy in reducing pain (Safitri, 2017). Likewise, a comparison between SSBM which uses the effleurage technique is considered to provide more of a relaxing effect to reduce pain than providing deep breathing relaxation therapy (Fitriana & Vidayanti, 2019).

Analysis of Nursing Implementation

SSBM therapy was given for 6 meetings with a duration of 10 minutes for each meeting. As (Mardiana, 2021) found that SSBM can effectively reduce the scale of acute pain and blood pressure if done for 20 minutes with 2 meetings a day for 3 days. Other research also shows that the application of SSBM is carried out in just 3

meetings, with each meeting having a massage duration of 5 to 10 minutes (Suwaryo et al., 2022). Even though there is a longer duration of application for each session, giving SSBM therapy with a duration of 10 minutes even has a good effect on lowering blood pressure. This is in accordance with research at the Temindung Community Health Center in Samarinda City in March 2020 where giving SSBM for 10 minutes with 6 meetings within a period of two weeks showed an average reduction in systolic blood pressure of 9.13 mmHg (Pramono & Masita, 2021). Likewise, the application of SSBM given to the elderly with a duration of 5-10 minutes with 2 meetings in the morning and evening for 3 days is known to be effective in reducing systolic and diastolic blood pressure (Suwaryo et al., 2022).

Nursing Evaluation Analysis

The general nursing evaluation shows that by administering SSBM therapy, there were changes in blood pressure and pain scale in the client, Mrs. J. The average systolic blood pressure before SSBM therapy was 151.7 mmHg and after therapy it became 141.7 mmHg. Changes also occurred in the average diastolic blood pressure, namely before SSBM therapy it was 96.7 mmHg to 87.5 mmHg after SSBM

therapy. These results are in line with research by Sani and Irdianty (2020) which shows the mean difference between Systolic Blood Pressure (TDS) and Diastolic Blood Pressure (TDD) before and after SSBM intervention, namely the previous mean TDS was 167.80 to 133.63 after the intervention. TDD before the intervention showed a value of 68.88 and after the SSBM intervention it became 68.28.

SSBM therapy can help provide a relaxing sensation to the elderly by increasing parasympathetic nerve activity and decreasing sympathetic nerve activity. This mechanism causes a process of vasodilation in the arteriolar diameter. The function of the parasympathetic nervous system is to stimulate the release of the neurotransmitter acetylcholine which acts as an inhibitor of sympathetic nerve activity. Conditions that arise are a decrease in stroke volume, contractility in the myocardium, vasodilation in the veins and arterioles. The impact after SSBM therapy is a decrease in cardiac output and heart rate, so that blood pressure decreases (Mobalen et al., 2020).

Pain scale on the client Mrs. J also decreased after administration of SSBM therapy. The average pain scale before SSBM therapy was 4.7 NRS to 3.8 NRS after therapy. The reduction in the pain

scale is supported by research by Surya and Yusri (2022), namely that the headache scale felt by hypertensive clients on average before giving SSBM was 5.48 and after giving SSBM was 2.24. Research by Suwaryo et al. (2022) also found that after SSBM therapy, the pain scale decreased to 1 to 0 on the third day.

SSBM therapy can stimulate the production of the hormone dopamine which functions to increase the activity of the parasympathetic nervous system which can have a relaxing effect on the body. Cutaneous stimulation during SSBM therapy can provide tactile stimulation which will be perceived by the body as a relaxation response, so that the resulting effect is reduced pain (Nur Hayati & Ari Wibowo, 2022).

Based on the results of the evaluation from the first to the sixth meeting, it was found that there were changes in nursing outcomes. At the first meeting before the SSBM intervention, it was found that the scale of complaints of pain and difficulty sleeping was on a scale of 2 (moderately improved), grimacing expression and pulse rate were on a scale of 3 (moderately), and blood pressure was on a scale of 2 (moderately worsened). Then, after being given SSBM therapy for 6 meetings with a duration of 10 minutes at each meeting, changes were found, namely complaints of

pain, grimacing expressions, and sleep quality was on a scale of 5 (decreased), pulse frequency was on a scale of 5 (improved), and blood pressure was on a scale of 5 (decreased). scale 4 (quite improved).

5. CONCLUSION

Nursing evaluation shows changes in the condition of Client Ny. J which continues to improve with the achievement of indicators in the expected outcome criteria. There were changes in systolic and diastolic blood pressure, namely pre-intervention systolic BP had a mean of 151.7 mmHg to 141.7 mmHg post-intervention. Likewise, diastolic BP had a mean pre-intervention of 96.7 mmHg to 87.5 mmHg post-intervention.

Application of SSBM (SSBM) for 6 (six) meetings with a duration of 10 minutes for each meeting using 6 SSBM techniques has a positive influence on reducing pain scale, blood pressure, improving pulse frequency, and helping improve sleep quality.

AUTHOR CONTRIBUTIONS

Substantial contributions to conceptualization, data curation, analysis, Writing - review & editing: Yessi Eka Safitri and Latifa Aini Susumaningrum. Supervision: Fahrudin Kurdi and Achmad

Ali Basri. Manuscript revisions: Yessi Eka Safitri.

CONFLICT OF INTEREST

The authors declare no conflict of interest for this publication.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

REFERENCES

- Cahyati, Y., Somantri, I., Cahyati, A., Rosdiana, I., Sugiarti, I., Iman, A. T., & Puruhita, T. K. A. (2021). *Penatalaksanaan Terpadu Penyakit Tidak Menular (Pedoman Bagi Kader Dan Masyarakat)*. Deepublish.
- Dinkes Jember. (2020). *Profil Kesehatan Kabupaten Jember 2020*. Dinas Kesehatan Kabupaten Jember.
- Falah, M. (2019). Hubungan Jenis Kelamin Dengan Angka Kejadian Hipertensi Pada Masyarakat Di Kelurahan Tamansari Kota Tasikmalaya. *Jurnal Keperawatan & Kebidanan STIKes Mitra Kencana Tasikmalaya*, 3(1), 85–94.

- Fitriana, L. B., & Vidayanti, V. (2019). Pengaruh Massage Effleurage Dan Relaksasi Nafas Dalam Terhadap Nyeri Punggung Ibu Hamil Trimester III. *Bunda Edu-Midwifery Journal (BEMJ)*, 2(2), 1-6.
- Hutagaluh, M. S. (2019). *Panduan Lengkap Stroke: Mencegah, Mengobati dan Menyembuhkan*. Nusamedia.
- Kemenkes RI. (2016). Peraturan Menteri Kesehatan Republik Indonesia Nomor 25 tentang Rencana Aksi Nasional Kesehatan Lanjut Usia Tahun 2016-2019.
- Kemenkes RI. (2016). Peraturan Menteri Kesehatan Republik Indonesia Nomor 25 tentang Rencana Aksi Nasional Kesehatan Lanjut Usia Tahun 2016-2019.
- Liew, S. J., Lee, J. T., Tan, C. S., Koh, C. H. G., Van Dam, R., & Müller-Riemenschneider, F. (2019). Sociodemographic Factors in Relation to Hypertension Prevalence, Awareness, Treatment and Control in a Multi-ethnic Asian Population: A cross-Sectional Study. *BMJ Open*, 9(5), 1-10. <https://doi.org/10.1136/bmjopen-2018-025869>
- Mardiana. (2021). Effectiveness of Back Massage Therapy to Reduce Acute Pain in Hypertension in the Working Area of Health Center Kading Bone Regency. *Journal La Medihealthico*, 2(1), 27-31. <https://doi.org/10.37899/journallamedihealthico.v2i1.284>
- Mills, K. T., Bundy, J. D., Kelly, T. N., Reed, J. E., Kearney, P. M., Reynolds, K., Chen, J., & He, J. (2016). Global disparities of hypertension prevalence and control. *Circulation*, 134(6), 441-450. <https://doi.org/10.1161/CIRCULATIONAHA.115.018912>
- Mobalen, O., Werung, D. V., & Maryen, Y. (2020). Pengaruh Stimulasi Kutaneus Slow Stroke Back Massage (Ssbm) Terhadap Penurunan Tekanan Darah Pada Pasien Hipertensi The Effect Of Kutaneus Slow Stroke Back Massage (Ssbm) Stimulation On Blood Pressure Reduction In Hypertension Patients. *Nursing Arts*, XIV(2), 58-64.
- Mustarifah, S., & Indiwati, E. (2022). Efektivitas Napas Dalam Terhadap Penurunan Nyeri Kepala pada Pasien Hipertensi di Puskesmas Babelan I. *Malahayati Nursing Journal*, 4(10),

- 2806–2823.
<https://doi.org/10.33024/mnj.v4i10.7130>
- NCD-RisC. (2021). Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants. *The Lancet*, 398, 957–980. [https://doi.org/10.1016/S0140-6736\(21\)01330-1](https://doi.org/10.1016/S0140-6736(21)01330-1)
- Ni Luh Seri Astuti, Dharma Wisnawa, I. N., & Satria Astawa, I. G. (2022). The Impact of Effleurage Technique Massage on Blood Pressure toward Elderly Hypertension in Peguyangan Village. *Nursing and Health Sciences Journal (NHSJ)*, 2(3), 280–284. <https://doi.org/10.53713/nhs.v2i3.155>
- Nugroho, R. A., Ayubbana, S., & Atika, S. (2022). Penerapan Pemberian Kompres Hangat Pada Leher Terhadap Skala Nyeri Kepala Pada Pasien Hipertensi Di Kota Metro. *Jurnal Cendikia Muda*, 2(4), 514–520.
- Nuraeni, E. (2019). Hubungan Usia Dan Jenis Kelamin Beresiko Dengan Kejadian Hipertensi Di Klinik X Kota Tangerang. *Jurnal JKFT: Muhammadiyah Tangerang*, 4(1), 1–6. <https://doi.org/10.31000/jkft.v4i1.1996>
- Nur Hayati, T., & Ari Wibowo, T. (2022). Pengaruh Slow Stroke Back Massage (SSBM) terhadap Kualitas Tidur pada Penderita Diabetes Melitus tipe 2 di Wilayah Kerja Puskesmas Juanda Kota Samarinda. *Jurnal Keperawatan Muhammadiyah*, 7(4), 120–123.
- Purwono, J., Sari, R., Ratnasari, A., & Budianto, A. (2020). Pola Konsumsi Garam Dengan Kejadian Hipertensi Pada Lansia. *Jurnal Wacana Kesehatan*, 5(1), 531–542. <https://doi.org/10.52822/jwk.v5i1.120>
- Puspita, B., & Fitriani, A. (2021). Peran Konsumsi Kopi terhadap Kejadian Hipertensi pada Laki-Laki Usia Produktif (18-65 Tahun). *Muhammadiyah Journal of Nutrition and Food Science (MJNF)*, 2(1), 13–23. <https://doi.org/10.24853/mjnf.2.1.13-23>
- Rohmawati, D. L. (2021). Terapi Komplementer Untuk Menurunkan

- Tekanan Darah (Evidence Based Practice). *Media Sains Indonesia*.
- Rosse, P., Habel, G., Silalahi, P. Y., & Taihuttu, Y. (2018). Hubungan Kualitas Tidur dengan Nyeri Kepala Primer pada Masyarakat Daerah Pesisir Desa Nusalaut, Ambon. *Smart Medical Journal*, 1(2), 47–55.
- Safitri, Y. (2017). Perbandingan Efektifitas Massage Dan Kompres Hangat Terhadap Nyeri Persalinan Kala 1 Fase Aktif. *Jurnal Ners Universitas Pahlawan Tuanku Tambusai*, 1(2), 52–57.
- Sani, F. N., & Irdianty, M. S. (2020). The Effects of SSBM and Lavender Aromatherapy on Blood Pressure in Hypertensive Patients. *Indonesian Journal of Medicine*, 5(3), 178–184. <https://doi.org/10.26911/theijmed.2020.05.03.01>
- Sapto Pramono, J., & Khomatul Masita, I. (2021). Reducing Blood Pressure with SSBM and Warm Water Foot Soak on Isolated Systolic Hypertension Patients. *International Journal of Nursing and Health Services (IJNHS)*, 4(4), 414–422. <https://doi.org/10.35654/ijnhs.v4i4.467>
- Setiyorini, E., & Wulandari, N. A. (2018). Asuhan Keperawatan Lanjut Usia dengan Penyakit Degeneratif. *Media Nusa Creative*.
- Susanti, N., Siregar, P. A., & Falefi, R. (2020). Determinan Kejadian Hipertensi Masyarakat Pesisir Berdasarkan Kondisi Sosio Demografi dan Konsumsi Makan. *Jurnal Ilmiah Kesehatan*, 2(1), 43–52.
- Surya, D. O., & Yusri, V. (2022). Efektifitas Terapi SSBM Terhadap Nyeri Kepala Pasien Hipertensi. *Jurnal Keperawatan Muhammadiyah*, 7(4), 120–123.
- Suwaryo, P. A. W., Aminah, S., Waladani, B., Setianingsih, E., & Setianingsih, R. (2022). Physiotherapy Treatment of Hypertension Patients to Reduce Headache Using SSBM Therapy. *International Conference on Sustainable Innovation on Health Sciences and Nursing*, 1(55), 176–182. <https://doi.org/10.2991/978-94-6463-070-1>
- Warni, H., Sari, N. N., & Agata, A. (2020). Perilaku Konsumsi Kopi Dengan Resiko Terjadinya Hipertensi. *Jurnal Ilmu*