




Progressive Muscle Relaxation Therapy in Hypertensive Elderly with Acute Pain

Resi Permatasari^{1*}, Latifa Aini Susumaningrum², Fahrudin Kurdi², Achmad Ali Basri⁴

1 Faculty of Nursing, University of Jember, Jember, Indonesia

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


3 Universitas dr. Soebandi Jember, Indonesia

Article History

Submitted: 28-02-2023

Revised: 25-04-2023

Accepted: 27-11-2023

 doi.org/10.58545/jkki.v3i3.79

Copyright (c) 2023
Resi Permatasari

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



Abstract

Hypertension is a major health problem that occurs in the elderly. The prevalence of hypertension increases with ageing. Pain is a problem that can be caused by several conditions, such as hypertension. Progressive muscle relaxation therapy can be used to lower blood pressure. This research aims to determine the application of progressive muscle relaxation therapy in the elderly who experience hypertension with acute pain nursing problems. This research uses a case report method that describes the case of Mrs A, who has acute pain nursing problems at Dahlia room, UPT PSTW Jember. Nursing care is provided comprehensively for three days with a duration of 15 minutes for each meeting. The results were obtained after being given nursing care with progressive muscle relaxation therapy interventions. Namely, there was a decrease in pain levels and complaints of pain with results on the first day pre-intervention blood pressure 150/100 mmHg post-intervention 140/90 mmHg, and pre-intervention pain complaints scale 5 NRS post-intervention 5 NRS. On the fifth day, the results of pre-intervention blood pressure were 140/90 mmHg, post-intervention 130/90 mmHg, and pre-intervention pain complaints 3 NRS, post-intervention 3 NRS. The average blood pressure for five days was pre-intervention 144/98 mmHg, post-intervention 134/90 mmHg, and pre-intervention pain complaints 4.2 NRS post-intervention 3.8 NRS. Progressive muscle relaxation therapy, which is carried out three times with a duration of 15 minutes, can have an effect on reducing blood pressure and reducing acute pain problems.

Keywords: Elderly, Hypertension, Acute Pain, Progressive Muscle Relaxation

Correspondence

Resi Permatasari

Faculty of Nursing, University of Jember, Indonesia

Jl. Kalimantan No.37, Sumbersari, Jember, East Java 68121.

Email: resipermatasari48@gmail.com

How to cite:

Permatasari, R., Susumaningrum, L. A., Kurdi, F., & Basri, A. A. (2023). Progressive Muscle Relaxation Therapy in Hypertensive Elderly with Acute Pain. *Jurnal Kesehatan Komunitas Indonesia*, 3(3), 326-339. <https://doi.org/10.58545/jkki.v3i3.79>

1. BACKGROUND

Hypertension is a major health problem that often occurs in the elderly. Naturally, elderly people will experience a

decline in body function or what is called ageing. Aging in the elderly is characterized by a decline in physical and psychological abilities, as well as an increased risk of

disease that can lead to death (Ministry of Health of the Republic of Indonesia, 2022). The elderly themselves are defined as individuals who have reached the age of 60 years and over (Ministry of Health of the Republic of Indonesia, 2019). The prevalence of hypertension increases with ageing. More than 75% of hypertension occurs in individuals over 70 years of age (Volpe, 2019).

The prevalence of hypertension in Indonesia has increased. In 2013, the prevalence of hypertension was 25.8%, and in 2018 it increased to 34.1%. The prevalence of hypertension at ages 55-64 years was 55.2%, at ages 65-74 years was 63.2%, and at ages ≥ 75 years was 69.5%. East Java ranks 6th in the province with a hypertension prevalence of 36.3%. In 2018, there were 2,005,393 cases of hypertension served at Community Health Centers, with 826,368 cases being men and 1,179,025 cases being women. This figure has increased from 2017. Namely, there were 589,870 cases, with 215,781 cases for men and 374,089 cases for women (Risksedas, 2018). The percentage of hypertension sufferers who receive health services according to Community Health Center standards in Jember Regency in 2022 is 190,979 sufferers out of a total of 741,735 sufferers. This shows that 25.75% of hypertension sufferers receive health

services according to standards (Jember District Health Service, 2020). A nursing home is a place for elderly people who don't have a family or elderly people who really want to live there. The prevalence of systolic and diastolic hypertension in elderly people living in Jember nursing homes is 38.09% and 21.43% (Yunanto et al, 2020).

Blood pressure is determined by many factors, some of which are related to the condition of the heart and blood vessels, which are influenced by age. High blood pressure or hypertension can be caused by a disease process (Mauk, 2006). Hypertension can affect more than 75% of individuals aged >70 years. Hypertension is closely related to systolic blood pressure and diastolic blood pressure, which will increase with age. Systolic pressure is related to the high pressure in the arteries when the heart contracts. Meanwhile, diastolic pressure is related to the pressure in the arteries when the heart relaxes between two heartbeats (Akbar et al., 2020). There are mechanisms underlying hypertension occurring in the elderly, one of which is a decrease in the elasticity of the aortic wall, thickening of the heart valves, a decrease in the heart's ability to pump so that contraction and volume also decrease, a decrease in blood vessel elasticity, and an increase in peripheral vascular resistance

(Akbar et al., 2020). Ageing can cause structural and functional changes in arteries. Over time, the arteries will become stiff, and their elasticity will decrease. Arterial stiffness results in difficulty in accommodating volume changes throughout the cardiac cycle (Oliveros et al., 2019).

Pain is one of the problems that can occur due to several conditions, such as hypertension. Pain has an impact on dysfunctional functional health patterns, both acute pain and chronic pain (Wijaya et al., 2020). Acute pain can be predicted regarding the cause and healing time and can be treated immediately. However, it should be noted that if acute pain is not treated immediately, this pain will develop into chronic pain. The pain-healing process cannot be achieved completely, but pain reduction can be achieved to a tolerable level (Potter & Perry, 2009). Pain that occurs in hypertension sufferers is caused by disorders of the blood vessels. Pain is the body's defence mechanism that arises as a result of tissue being damaged (Ferdisa & Ernawati, 2021).

There are several risk factors that can cause hypertension, some of which are age, gender, family history, smoking, excessive salt consumption, excess body weight, lack of physical activity, and stress (Ayu et al., 2022). Preventive measures that can be

taken to reduce hypertension are changing lifestyle, consuming anti-hypertension medication, having a low-salt diet, not smoking, and doing regular physical activity. Apart from that, prevention efforts can be made through relaxation therapy (Waryantini et al., 2021).

Relaxation therapy is not intended to replace pharmacological therapy, but this therapy is aimed at relaxing the body so that it will stimulate the release of endorphins, which are the body's natural analgesic and reduce pain (Ekarini et al., 2019). One of the relaxation therapies that can be used to lower blood pressure is progressive muscle relaxation therapy. Progressive muscle relaxation therapy is a technique that aims to achieve a relaxed state by applying gradual and continuous training methods to skeletal muscles. The training method used is contraction and relaxation movements in the muscles starting from head to toe (Noefitasari et al., 2022). This therapy can be an alternative for lowering blood pressure because it is easy to implement, cheap, has no side effects, can have a relaxing effect, and can be done by individuals independently (Nofia et al., 2022).

From the results of the study of PSP2N class XXIX students on 30 November 2022 at the Dahlia UPT PSTW Jember homestead, data was obtained

focusing on the client Mrs A (63 years old), namely the client complained of dizziness in the head and neck since one week ago, the client looked restless and occasionally grimaced, and when sleeping I often wake up. Pain assessment revealed P: hypertension, Q: stabbing, R: head and neck, S: 5 NRS, and T: intermittent. From these data, it can be concluded that a nursing problem was found, namely acute pain (D.0077), so students were interested in implementing progressive muscle relaxation therapy as an intervention to reduce acute pain in Mrs. A with hypertension at Wisma Dahlia UPT PSTW Jember.

2. METHODS

The research activities were carried out from 30 November 2022 to 04 December 2022. The method used was a descriptive case study with case selection, namely by conducting a comprehensive study at Wisma Dahlia UPT PSTW Jember to obtain elderly patients aged 63 years. The scope of implementation activities includes conducting assessments, which include complaints, checking vital signs, and assessing pain. Next, progressive muscle relaxation therapy was carried out by following the SOP stated in the Gerontic Nursing

practicum book and using media in the form of leaflets. The progressive muscle relaxation training method is a gradual and continuous training method for the skeletal muscles, starting from head to toe, with the movement method used, namely contraction and relaxation movements of the muscles. This progressive muscle relaxation therapy is carried out once a day (2 repetition cycles from head to toe) for five consecutive days with a duration of 15 minutes. The examination was carried out again 15 minutes after progressive muscle relaxation therapy was carried out with the aim of re-evaluating complaints, vital signs and pain. The results of the activities are documented in the patient's progress notes in the monitoring sheet.

3. RESULTS & DISCUSSION

Analysis of client characteristics

Client Mrs A is female and 63 years old. The client has entered old age. According to Minister of Health Regulation Number 25 of 2016, an elderly person is someone who has reached the age of 60 (sixty) years and above. The age range is divided into pre-elderly aged 45-59 years, elderly aged 60-69 years, and high-risk elderly aged > 70 years or ≥ 60 years with health problems (Permenkes, 2016).

Many factors can cause hypertension. Possible risk factors for clients are gender, excessive salt consumption, obesity and stress. Women have a greater risk of hypertension than men after menopause. This is due to a decrease in the production of the hormone estrogen, which plays a role in increasing High-Density Lipoprotein (HDL) levels. The hormone estrogen can cause blood vessels to become elastic so that blood pressure can be controlled properly. However, after menopause, women will experience an increase in blood pressure because they have lost the beneficial effects of the hormone estrogen (Aristotle, 2018). The client said he likes salty food, which carries a risk of developing hypertension. Salty foods contain high levels of sodium, which can cause hypertension. Someone who consumes high amounts of sodium will have a six times higher risk of suffering from hypertension. According to WHO, the limit for salt consumption in one day is one teaspoon or the equivalent of 6 grams (Ayu et al., 2022). It is said to be obese if the BMI is ≥ 25 and the client's BMI is 26.17, so the client can be said to be in the obese group. Increasing body weight risks developing hypertension. If body weight increases, the risk of hypertension will also increase. If body weight decreases, total blood volume will also decrease, hormones

related to blood pressure will change, and blood pressure will decrease (Sartik et al., 2017). Apart from that, the client also said he was thinking about his family, who had not visited in recent months. This can also be a risk factor for hypertension. Stress, which includes feelings of depression, depression, anger, fines and fear, can stimulate the release of the hormone adrenaline, which can cause the heart to beat faster and stronger, thereby triggering an increase in blood pressure. If this situation persists for a long time, the body will try to make adjustments so that abnormalities or pathological changes arise (Kartika et al., 2021).

Analysis of major nursing problems

The main nursing problem is acute pain (D.0077) related to physiological injury agents characterized by the client saying that he often has headaches. P: hypertension, Q: prickling, R: head and neck, S: 5 NRS, T: intermittent, BP 150/100 mmHg. The client said he often experienced headaches, and during the assessment, the client also appeared to grimace occasionally.

Hypertension is called the "silent killer" because the majority of individuals are not aware of the symptoms of hypertension (WHO, 2021). Signs and symptoms of hypertension are that

individuals will experience headaches, especially when they wake up in the morning, nosebleeds, blurred vision, pain in the chest area, nausea, vomiting, anxiety and tremors. The headache process experienced by individuals with hypertension is due to stimulation, be it biological, chemical or heat, which can stimulate nociceptors in the periphery so that pain impulses are transmitted to the spinal cord. These impulses are divided into two parts, namely impulses that go to the reticular formation, which causes slow pain, and impulses that go to the thalamus, which causes fast pain. Impulses that go to the thalamus will cause emotions and autonomic responses, namely increased blood pressure (Murtiono & Ngurah, 2020).

Nursing intervention analysis

The interventions carried out are in accordance with the SLKI and SDKI, namely including observation, therapeutic, educational and collaborative actions. The criteria for expected results are decreased pain complaints, decreased pulse frequency, and decreased blood pressure. During observation, location, characteristics, duration, frequency, quality, intensity of pain, and pain scale are identified. Apart from that, non-verbal pain responses were also identified, and factors

that aggravated and alleviated the pain were identified. In therapeutic measures, progressive muscle relaxation therapy is carried out, which has many benefits, one of which is to reduce anxiety, pain, muscle tension, heart rate, and blood pressure. In addition, its therapeutic action also facilitates rest and sleep. Education is also provided regarding explanations regarding the causes, periods and triggers of the pain felt, explaining how to relieve pain, and also recommending monitoring the pain felt independently. Collaboration is also provided by working with PSTW regarding the administration of medication that is appropriate for the client (PPNI SIKI, 2018).

Nursing implementation analysis

Researchers have implemented progressive muscle relaxation therapy. Progressive muscle relaxation is a technique that aims to achieve a relaxed state by applying gradual and continuous training methods to skeletal muscles. The training method used is doing contraction and relaxation movements in the muscles starting from head to toe (Waryantini, 2021). Progressive muscle relaxation can reduce the secretion of corticotropin-releasing hormones (CRH) and adrenocorticotrophic hormones (ACTH) in the hypothalamus. Decreased secretion of

these two hormones can cause a decrease in sympathetic nerve function so that the release of adrenaline and non-adrenaline will decrease (Fauziyyah et al., 2022). Effective relaxation therapy can lower heart rate and blood pressure and reduce muscle tension. The long-term goal of relaxation therapy is for individuals to continuously monitor themselves for indicators of tension in the body (Potter & Perry, 2009).

Pain is one of the problems that can occur due to several conditions, such as hypertension (Ferdisa & Ernawati, 2021). One of the non-pharmacological therapies for hypertension sufferers is progressive muscle relaxation therapy.

This therapy focuses on muscle activity, which aims to reduce the tension that occurs in the muscles so that it will produce relaxation in the body. A relaxed body will stimulate the release of endorphins, which are useful as the body's natural analgesic, thereby reducing pain (Nofia et al., 2022).

The implementation carried out has received approval regarding informed consent from the client. Apart from that, the place and time contract for implementing progressive muscle relaxation therapy have also been discussed. Implementation is carried out once every five days and within 15 minutes.

Nursing evaluation analysis

Table 1. Blood pressure pre and post-intervention

Session	Pre-Intervention		Post-Intervention	
	Systolic (mmHg)	Diastolic (mmHg)	Systolic (mmHg)	Diastolic (mmHg)
1	150	100	140	90
2	150	100	140	90
3	140	100	130	90
4	140	100	130	90
5	140	90	130	90

Table 2. The average of blood pressure pre and post-intervention

Variable	Mean (mmHg)	Blood Pressure (mmHg)
Pre systolic intervention	144	144/98
Pre diastolic intervention	98	
Post systolic intervention	134	134/90
Post diastolic intervention	90	

Tabel 3. Pain scale pre dan post-intervention

Session	Pain scale	
	Pre-Intervention (NRS)	Post-Intervention (NRS)
1	5	5
2	5	4
3	4	4
4	4	3
5	3	3

Table 4. Average results of pre and post-intervention pain scale

Variabel	Mean (NRS)
Pre intervention	4,2
Post intervention	3,8

Evaluation results of the main nursing problem of acute pain in Mrs A with hypertension, namely before progressive muscle relaxation therapy was carried out in November 2022. Before the intervention, blood pressure was 150/100 mmHg, pulse was 93x/minute, pain scale was 5 NRS, and the client occasionally grimaced, holding his head. The client reports pain in the head and neck. The pain comes and goes and gets worse when the client stands. After the progressive muscle relaxation intervention was carried out, the measurements were then carried out again 15 minutes after the progressive muscle relaxation therapy was carried out. The results were obtained, namely blood pressure 140/90 mmHg pulse 91x/minute. The client said the pain was still felt with a pain scale of 5 NRS, but the client said it felt more comfortable. From these results, it can be concluded that there has been improvement, but there is still a need for

progressive muscle relaxation therapy to reduce pain and blood pressure in clients.

On the second day, the first day of December 2022, the results before intervention showed blood pressure of 150/100 mmHg and pulse 89x/minute. The client said he still had pain in the head and neck with a scale of 5 on the NRS. The intervention was given, and measurements were taken again 15 minutes after progressive muscle relaxation therapy. The results were blood pressure 140/90 mmHg, pulse 82x/minute, and NRS scale 4. The client said the stiffness was slightly reduced in the neck. Apart from that, clients also said they were more comfortable after being given progressive muscle relaxation therapy. From these results, it can be said that there has been a change for the better, but therapy must still be provided so that the goals can be achieved with optimal results.

On the third day, December 2 2022, the results before the intervention were obtained, namely blood pressure 140/100 mmHg, pulse 86x/minute, NRS scale 4, and the client said the pain came and went but was no longer as severe as before. Progressive muscle relaxation therapy was carried out, and measurements were taken again 15 minutes after progressive muscle relaxation therapy. The results were blood pressure 130/90 mmHg, pulse 79x/minute, and pain scale 4 NRS. The client said that he was more relaxed after progressive muscle relaxation therapy. Apart from that, on the third day of evaluation, the client was able to carry out movements independently. This is a very good achievement, but there needs to be continuity in the implementation of therapy so that the established outcome criteria can achieve optimal results.

On the fourth day, December 3 2022, the results before the intervention were obtained, namely blood pressure 140/100 mmHg, pulse 84x/minute, and pain came and went with a scale of 4 on the NRS. After administering therapy, measurements were taken again 15 minutes later, and the results were obtained, namely blood pressure 130/90 mmHg, pulse 80x/minute, and pain decreased on the 3 NRS scale. The client said the pain was

reduced, and the client also applied therapy in his free time, such as in the afternoon and evening when he was going to sleep and did it independently. It can be concluded that therapy has a positive impact, and this needs to be done consistently so that the criteria for good results do not change in a bad direction, which has an impact on the client's health.

On the fifth day, December 4 2022, the results before the intervention were obtained, namely blood pressure 140/90 mmHg, pulse 84x/minute, and the client said the pain was controlled on a scale of 3 on the NRS. Therapy was given, and measurements were taken again 15 minutes after progressive muscle relaxation therapy. The results were blood pressure 130/90 mmHg, pulse 78x/minute, and pain scale 3 NRS. The client said that his condition was better, the pain was controlled, the stiffness was reduced, and the body became more relaxed. The result criteria show that there is a change in a positive and optimal direction. This requires continuity and consistency in the application of progressive muscle relaxation therapy so that previously good results will not change for the worse.

The results of this evaluation are in line with research conducted by Ferdisa and Ernawati (2021), namely that there is a

reduction in pain caused by hypertension. In the first patient, the pain went from a scale of 4 NRS to a scale of 2 NRS, and in the second patient, the pain went from a scale of 5 NRS to a scale of 2 NRS. This is also in line with research conducted by Budiono et al. (2018), which showed results that there was a reduction in pain in elderly people with hypertension after progressive muscle relaxation therapy. Severe pain from 3 people (5%) decreased to 1 person (2%). In moderate pain, 17 people (28%) remained and did not experience changes. In mild pain, 24 people (40%) experienced a decrease, namely 18 people (30%). And painlessness has increased from 16 people (27%) to 24 people (40%). Apart from that, the reduction in blood pressure is also in line with research conducted by Anggraini et al. (2022), namely that there is a difference in the reduction in systolic blood pressure before and after progressive muscle relaxation training with a p-value of 0.010, and there is a difference in the reduction in diastolic blood pressure before and after muscle relaxation training. Progressive with a p-value of 0.000 ($p < 0.05$).

4. CONCLUSION

Nursing problems for Mrs. A, namely acute pain (D.0077) b.d physiological

injuring agent d.d the client says that he often has headaches. P: hypertension, Q: prickling, R: head and neck, S: 5 NRS, T: intermittent, BP 150/100 mmHg. Nursing implementation was carried out by Mrs A, who has hypertension with acute pain nursing problems, based on interventions that have been planned for five days, namely identifying location, characteristics, duration, frequency, quality, pain intensity and pain scale, identifying non-verbal pain responses, providing non-pharmacological techniques to reduce pain (progressive muscle relaxation therapy is carried out once every five days with a duration of 15 minutes). Evaluation of the implementation of nursing actions that have been carried out on Mrs A corresponds to the planned outcome criteria in the intervention. The results of the evaluation above, namely on the fifth day, showed that there was a decrease in complaints of pain and a decrease in blood pressure in Mrs A, namely blood pressure 130/90 mmHg, and NRS scale 3. Clients can carry out progressive muscle relaxation therapy independently on the third day.

AUTHOR CONTRIBUTIONS

Substantial contributions to conception, data collection, and analysis: Resi Permatasari, Latifa Aini

Susumaningrum, Fahrudin Kurdi, Achmad Ali Basri. Writing: Resi Permatasari. Manuscript revisions: Resi Permatasari.

ACKNOWLEDGMENT

We would like to thank the chairman of UPT PSTW Jember in Indonesia and the participating elderly for their cooperation in this study.

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

Akbar, F., Nur, H., & Humaerah, U. I. (2020). Karakteristik Hipertensi pada Lanjut Usia di Desa Buku (Characteristics of Hypertension in the Elderly). *Jurnal Wawasan Kesehatan*, 5(2): 35-42. <https://stikessantupaulus.e-journal.id/JWK/article/view/88>

Anggraini Y., E. Sitorus, S. M. Damanik. 2022. Upaya Menurunkan Tekanan

Darah dengan Relaksasi Otot Progresif pada Lansia Hipertensi di Jakarta Timur. *Jurnal Akademi Keperawatan Husada Karya Jaya*. 8(1): 7-11. <http://dx.doi.org/10.59374/jakhhkj.v8i1.216>

Aristoteles. (2018). Korelasi Umur dan Jenis Kelamin dengan Penyakit Hipertensi di Emergency Center Unit Rumah Sakit Islam Siti Khadijah Palembang 2017. *Indonesia Jurnal Perawat*. 3(1):9-16.

Astuty, D.A., Sinaga, A. F., Syahlan, N., Siregar, S. M., Sofi, S., Zega, R. S., Annisa, A., & Dila, T. A. (2022). Faktor - Faktor Yang Menyebabkan Hipertensi Di Kelurahan Medan Tenggara. *Jurnal Kesehatan Masyarakat*, 10(2), 136-147. <https://doi.org/10.14710/jkm.v10i2.32252>

Pertami, S., Budiono, B., & Mustayah, M. (2018). Pemberdayaan Lansia Melalui Aktivitas Relaksasi Progresif Untuk Menurunkan Nyeri Kepala Dan Tekanan Darah Di Panti Werdha Pangesti Di Kelurahan Kalirejo Kec. Lawang Kab. Malang. *Jurnal Idaman (Induk Pemberdayaan Masyarakat*

- Pedesaan), 2(1), 7-12. Retrieved from <https://ojs.poltekkes-malang.ac.id/index.php/idaman/article/view/257>
- Dinas Kesehatan Kabupaten Jember. (2020). Profil Kesehatan Kabupaten Jember Tahun 2020. Jember: Dinas Kesehatan Kabupaten Jember.
- Ekarini, N. L. P., Heryati, & Maryam, R. S. (2019). Pengaruh Terapi Relaksasi Otot Progresif terhadap Respon Fisiologis Pasien Hipertensi. *Jurnal Kesehatan*. 10(1): 47-52. <https://doi.org/10.26630/jk.v10i1.1139>
- Fauziyyah, D., Pamela, N. & Mukhsin. A. (2022). Penerapan Relaksasi Otot Progresif terhadap Tekanan Darah pada Klien Hipertensi di Sukamajukaler Kota Tasikmalaya. *Healthcare Nursing Journal*. 4(2b): 38-42. <https://journal.umtas.ac.id/index.php/healthcare/article/view/2579>
- Ferdisa, R. J., & Ernawati, E. (2021). Penurunan Nyeri Kepala Pada Pasien Hipertensi Menggunakan Terapi Relaksasi Otot Progresif. In *Ners Muda* (Vol. 2, Issue 2, p. 47). LPPM Universitas Muhammadiyah Semarang. <https://doi.org/10.26714/nm.v2i2.6281>
- Kartika, M., Subakir, S., & Mirsiyanto, E. (2021). Faktor-Faktor Risiko Yang Berhubungan Dengan Hipertensi Di Wilayah Kerja Puskesmas Rawang Kota Sungai Penuh Tahun 2020. In *Jurnal Kesmas Jambi* (Vol. 5, Issue 1, pp. 1-9). Faculty of Education and Teacher Training, Jambi University. <https://doi.org/10.22437/jkmj.v5i1.12396>
- Kementerian Kesehatan Republik Indonesia. (2019). *Lansia Sehat, Lansia Bahagia*. Jakarta: Kementerian Kesehatan RI Direktorat Jenderal Kesehatan Masyarakat.
- Kementerian Kesehatan Republik Indonesia. (2022). *Lansia Berdaya, bangsa Sejahtera*. Jakarta: Pusat Data dan Informasi Kementerian Kesehatan RI.
- Mauk, K. L. (2006). *Gerontological Nursing: Competencies for Care*. Ontario Canada: Jones and Bartlett Publishers.
- Ngurah, G. (2020). *Gambaran Asuhan Keperawatan Pada Pasien Hipertensi Dengan Gangguan Kebutuhan Rasa*

- Nyaman Nyeri. *Jurnal Gema Keperawatan* (Vol. 13, Issue 1, pp. 35–42).
<https://doi.org/10.33992/jgk.v13i1.1181>
- Noefitasari, I & Idris, D. N. T. (2022). Reducing Blood Pressure on Elderly with Hypertension with Progressive Muscle Relaxation Therapy. *Journal Of Ners And Midwifery*. 9(3): 370-378.
<http://jnk.phb.ac.id/index.php/jnk/article/view/896>
- Nofia, V. R., Idaman, M., Herlina, A. & Idelni, I. (2022). Pengaruh Latihan Relaksasi Otot Progresif Terhadap Penurunan Tekanan Darah pada Pasien Hipertensi di Wilayah Kerja Puskesmas Siulak Mukai Kabupaten Kerinci. *Jurnal Kesehatan Medika Saintika*. 13(1): 218-223.
<https://jurnal.syedzasaintika.ac.id/index.php/medika/article/view/1406>
- Oliveros, E., Patel, H., Kyung, S., Fugar, S., Goldberg, A., Madan, N., & Williams, K. A. (2020). Hypertension in older adults: Assessment, management, and challenges. *Clinical cardiology*, 43(2), 99–107.
<https://doi.org/10.1002/clc.23303>
- Peraturan Menteri Kesehatan Nomor 25 Tahun 2016. Rencana Aksi Nasional Kesehatan Lanjut Usia Tahun 2016-2019. 26 Mei 2016. Jakarta.
- Potter, P. A. & Perry A. G. (2009). *Fundamental Keperawatan Edisi 7 Buku 1*. Jakarta: Salemba Medika.
- PPNI. (2018). SIKI Standar Intervensi Keperawatan Indonesia : Definisi dan Tindakan Keperawatan (Edisi 1). Jakarta: DPP PPNI.
- Riset Kesehatan Dasar. (2018). Hasil Utama RISKESDAS 2018. Jakarta: Kementerian Kesehatan RI Badan Penelitian dan Pengembangan Kesehatan.
- Sartik, S., Tjekyan, R.M. S., & Zulkarnain, M. (2017). Risk Factors And The Incidence of Hipertension In Palembang. *Jurnal Ilmu Kesehatan Masyarakat* (Vol. 8, Issue 3, pp. 180–191). Faculty of Public Health of Sriwijaya University.
<https://doi.org/10.26553/jikm.2017.8.3.180-191>
- Volpe, M., Battistoni, A., Rubattu, S., & Tocci, G. (2019). Hypertension in the elderly: which are the blood pressure threshold values?. *European heart*

journal supplements : journal of the European Society of Cardiology, 21(Suppl B), B105–B106. <https://doi.org/10.1093/eurheartj/suz023>

Waryantini, W., Amelia, R., & Harisman, L. (2021). Pengaruh Relaksasi Otot Progresif Terhadap Tekanan Darah Pada Lansia Dengan Hipertensi. In *Healthy Journal* (Vol. 10, Issue 1, pp. 37–44). Universitas Bale Bandung. <https://doi.org/10.55222/healthyjournal.v10i1.514>

Wijaya, E., & Nurhidayati, T. (2020). Penerapan Terapi Relaksasi Otot Progresif Dalam Menurunkan Skala Nyeri Sendi Lansia. In *Ners Muda* (Vol. 1, Issue 2, p. 88). LPPM Universitas Muhammadiyah Semarang. <https://doi.org/10.26714/nm.v1i2.5643>

World Health Organization. (2021). Hypertension. <https://www.who.int/news-room/fact-sheets/detail/hypertension> [accessed on December 2022].