


Application Of Mirror Therapy On Mr.F With Stroke In The Abimanyu Room At K.R.M.T Wongso Negoro Regional Hospital Semarang

Fitkie Arba' Putra¹, Amrih Widiati²

Nursing Profession Student, Faculty of Nursing and Health Sciences, Karya Husada University, Semarang Indonesia¹, Lecturer at the Faculty of Nursing and Health at Karya Husada University, Semarang, Indonesia²

| Article Info | ABSTRACT |
|--|---|
| Keywords: Mirror Therapy, Upper Extremity Muscle Weakness, Stroke Non Hemorogik. | Neurological disorders that can be identified from lost motor function, sudden loss of visual or speech abilities, and caused by blockages formed in the blood vessels of the brain or peripheral organs caused by atherosclerosis are the meaning of non-hemorrhagic stroke. Some things that can be experienced include sudden headaches, feeling dizzy combined with nausea and vomiting, feeling confused, unclear vision, suddenly having difficulty speaking, disturbed balance, feeling numb on one side of the body or tingling. Purpose: describes nursing care by applying mirror therapy to Mr.S with non-hemorrhagic stroke. Methods: Descriptive case studies are used as the following type of research, with the subject Mr. S, 57 years old, male. Data was collected by conducting interviews, physical examinations and observations, as well as collecting data based on documentation studies. Results: Based on studies analyzed during the delivery of mirror therapy intervention with a diagnosis of physical mobility disorders, there was a significant increase in muscle strength during the 7 days of intervention, namely the first day with a muscle strength value of 1 and the seventh day with a muscle strength value of 3, but there were family problems, motivation which decreased during providing interventions that cause the therapy provided to be less than optimal because the patient's focus is disturbed. Conclusion: the provision of mirror therapy can overcome muscle weakness (hemiparesis) in Mr. S with non-hemorrhagic stroke. |
| This is an open access article under the CC BY-NC license  | Corresponding Author: Fitkie Arba' Putra Nursing Profession Student, Faculty of Nursing and Health Sciences, Karya Husada University, Semarang fitkiearbaputra@gmail.com |

INTRODUCTION

Stroke is usually at the root of mortality with heart disease and cancer coming in third. This dysfunction in the brain suddenly appears and lasts more than one day due to problems with blood flow to the brain (Pinzon & Asanti, 2020). The blood circulating in the brain experiences an obstruction that stems from the rupture or blockage of blood vessels in the brain (Pinzon & Asanti, 2020). The brain that should get oxygen can cause nerve cells or neurons to die. Circulatory disorders that cause strokes can appear in babies born until further efforts. However, the frequency of strokes increases with age. The increasing age has the potential to experience this disease (Muttaqin, 2018).

In 2019 WHO provided data if a total of 20.5 million people in various parts of the world experienced stroke disease (World Health Organization, 2019). The problem often faced by patients with this disease is the impairment experienced in mobility. Patients feel difficulty when walking due to obstacles in muscle strength, coordination of movement and impaired balance (Muttaqin, 2018).

Based on diagnosis, Indonesia with its stroke prevalence in 2019 had a total of 2,137,941 cases. The percentage of mortality in Indonesia if based on age is 45 to 55 years as much as 15%.9%, for the age category 55 to 64 years as much as 26.8%, and for the 65 years category as much as 23.5%. Among those who experienced disability amounted to 1.6% (Riskasdas, 2019). The effects of stroke can be in the form of weakness or hemiparesis and paralysis or hemiplegia, which is one of the forms of motor deficit. The cause can come from the inhibition of motor neurons with characteristics of loss of control over conscious or volunteer movements, impaired movement, limited muscle tone, and limited reflexes (Pinzon & Asanti, 2020).

Based on the data obtained from the recapitulation of new cases of non-communicable diseases (NCDs), it can be reported that the total number of NCD cases in 2018 in Central Java was 606,939, which increased to 607,847 in 2019 (Badan Pusat Statistik, 2019). The 2019 data from Reskesdas shows that in Semarang City, the prevalence of stroke cases was 95,432 or in percentage terms, 15.7% (Riskasdas, 2019). Symptoms that are often felt to appear are hemiparesis or hemiplegia. The condition of hemiparesis or hemiplegia is one of the many aspects that are the root of the normal postural reflex system disappearing, such as controlling the elbow to move, controlling the motion to balance, body movements for various functional movements in the extremities (Smeltzer & Bare, 2022). One of the many rehabilitation therapies that can be carried out for people with this disease to increase the level of functional status in motor sensory is an exercise that utilizes mirror therapy or mirror media (Junaidi, 2018). This exercise is an exercise that trains the motor imagination of the patient, where the mirror will offer a visual image to the brain by observation of the body's movements that are inclined to be followed like a mirror by the side of the body that is disturbed (Sudarsini, 2017). The impact of this exercise on the mobility of stroke patients is that the scope of speed, joint motion, and accuracy of movement has increased when compared to other exercises (Junaidi, 2018). The study conducted by Hermanto, Risma and Hary concluded that there was a significant effect of the exercise on muscle strength which increased with a P-value of 0.000 (Hermanto et al., 2018).

The study conducted by Irawandi concluded that offering a combination of ROM therapy and mirror therapy performed by ischemic stroke patients in accordance with the provisions has a significant effect on increasing upper limb muscle strength and the patient's self-acceptance process, which makes the following therapy can be used as one of the permanent procedures in offering nursing actions (Irawandi, 2018).

Research conducted by Septafani, Trusilawati, and Sujatmiko showed that before being given mirror therapy, almost half of the respondents, totaling 11 people, as many as 45.46% or 5 people experienced medium-level addiction in fulfilling Activities of Daily Living. After mirror therapy, 6 people or 54.55% still showed a medium level of addiction. One person or

9.09% who previously had full addiction improved to full addiction, while as many as 18.18% or two people who previously had mild dependence became independent after receiving mirror therapy (Sayekti & Sonhaji, 2024).

A preliminary survey conducted by the researchers showed that from January to July 2023, there were 551 stroke patients admitted to the inpatient ward of Wongsonegoro Hospital Semarang. The majority of patients complained of hemiparesis or muscle weakness affecting either the left or right side of the body, and their muscle performance could be measured on a scale of 1 out of a scale of 0 to 5. This is a common impact of hemiparesis mechanism in stroke patients. For rehabilitation, nurses at RSUD Wongsonegoro Semarang have implemented active and passive range of motion (ROM) exercises to help improve the patient's muscle strength. However, mirror therapy, which is relatively easy and inexpensive to implement, has not been applied by nurses in the rehabilitation process of stroke patients at the hospital.

Based on the above review, the following topic attracts the author's attention to dig deeper and give the title of this research "Application of Mirror Therapy on Mr.S with Non Hemorrhagic Stroke in Abimanyu Room, K.R.M.T Wongso Negoro Semarang Regional Hospital". The formulation of the problem formulated is "How can nursing care with the provision of mirror therapy increase upper limb muscle strength in non-hemorrhagic stroke patients?" and aims to describe nursing care with the application of mirror therapy for non-hemorrhagic stroke patients

METHODS

This study was prepared using a descriptive method, which aims to explain in detail the process of implementing nursing care. The main focus in this study is the application of mirror therapy (Mirror Therapy) on Mr. S, a patient with Non Hemorrhagic Stroke who was treated in Abimanyu room, K.R.M.T Wong Regional Hospital. S, a patient with non-hemorrhagic stroke who was treated in the Abimanyu room, K.R.M.T Wongso Negoro Regional Hospital, Semarang.

The focus of study in this paper is the application of Mirror Therapy on Mr.S with non-hemorrhagic stroke. The instruments in this case study are SOP Mirror Therapy, SOP for measuring muscle strength using Manual Muscle Testing, observation sheet for measuring muscle strength. In research, data collection is an important stage that involves approaching the subject to obtain the necessary information. In this scientific paper, data was collected through several methods, namely interviews, observation, physical examination, and document recording.

The place used for the case study was the Abimanyu room of the K.R.M.T Wongso Negoro Semarang Regional Hospital. In this study, the data obtained was analyzed by dividing it into two main categories. The first category is subjective data, which comes from patients' views and assessments regarding their health conditions. Meanwhile, the second category is objective data, which is obtained through direct observation, measurement, or physical examination using various predetermined methods.

RESULTS AND DISCUSSION

Study Results and Cases

Supporting Data

a. Laboratory Examination

Table 4. 1 Laboratory Examination

| Name | Results | Unit | Normal Value |
|---------------------|---------|--------|----------------|
| INR | 1.11 | | |
| APPT Kontrol | 24.7 | second | |
| APPT Pasien | 32.7 | second | 26.0-34.0 |
| Kolesterol Total | 18.7 | mg/dL | <200 |
| PT Kontrol | 11.4 | detik | |
| PT Pasien | 12.4 | detik | 11.0-15.0 |
| Asam Urat | 7.2 | mg/dL | 2.4-7.4 |
| <i>Trigliseride</i> | 72 | mg/dL | <=150 |
| HDL Kolesterol | 110.0 | mg/dL | >45 |
| LDL Kolesterol | 107 | mg/dL | Normal : <130B |
| HBsAg Kualitatif | Negatif | S/CO | Negatif |
| Glukosa | 128 | mg/dL | 70-110 |

b. Diagnostic Examination

CT Scan of the Head Lacunar infarctions of the left centrum semiovale, left right coronardaiata, left nucleus caudatus and pons. No visible intracranial hemorrhage or signs of increased intracranial pressure at this time.

c. Medication Therapy

Table 4. 2 Medication Therapy

| No | Name of Medicine | Dose | Indications |
|------------------|------------------|---------|--|
| Type : Per oral | | | |
| 1 | Brilinta | 2x90mg | Brilinta is a medicine to prevent blood clots. |
| 2 | Folic Acid | 1x1mg | Folic acid functions to produce red blood cells |
| 3 | Furosemide | 1x40mg | Furosemide is a diuretic drug that lowers blood pressure. |
| 4 | Atorvastatin | 1x40mg | Atorvastatin is a drug that lowers bad cholesterol and triglycerides. |
| 5 | CPG | 1x75mg | CPG is a drug that dilutes and prevents blood clots. |
| 6 | Amlodipine | 1x10mg | Amlodipine is a blood pressure lowering drug |
| 7 | Bisoprolol | 1x2.5mg | Bisoprolol is a drug that relaxes blood vessels and slows the heart rate |
| Type : Injection | | | |
| 1 | Mecobalamin | 1x500mg | Mecobalamin is a medicine for megaloblastic anemia caused by vitamin B12 deficiency. |

| | | | |
|---|--------------|-----------|--|
| 2 | Citicolin | 2x500mg | Citicolin is a drug to improve memory and brain function after stroke. |
| 3 | Inviclot | 800ui/jam | Inviclot is a medicine that prevents blood clots from occurring. |
| 4 | Lansoprazole | loading | Lansoprazole a drug that inhibits the production of stomach acid |

d. Vital Signs

Table 4. 3 Vital Signs

| No | Type of Inspection | Date & Time of Inspection | | | | | | | | |
|----|--------------------|---------------------------|----------------------|------------------|--------------------|----------------------|------------------|--------------------|----------------------|------------------|
| | | 2/9/2024 | | | 3/9/2024 | | | 4/9/2024 | | |
| | | Morning : 09.00 | After-non : 15.00 | Night : 22.00 | Morning : 09.00 | After-non : 15.00 | Night : 22.00 | Morning : 09.00 | After-non : 15.00 | Night : 22.00 |
| 1 | Blood Pressure | 148/92 | 136/88 | 138/85 | 130/82 | 126/73 | 119/69 | 122/78 | 125/80 | 129/82 |
| 2 | Temperature | 36.7 | 36.8 | 37.1 | 36.8 | 36.9 | 37.2 | 36.5 | 36.5 | 36.9 |
| 3 | Pulse | 77 | 81 | 89 | 86 | 68 | 55 | 67 | 56 | 62 |
| 4 | Breathing | 17 | 17 | 20 | 21 | 18 | 16 | 20 | 19 | 19 |

A non-hemorrhagic stroke, also known as an ischemic stroke, is a sudden neurological disorder resulting in the loss of motor function, speech ability, or vision. The primary cause of this type of stroke is a blockage or blood clot (thrombus) formed within the blood vessels of the brain or other organs, typically triggered by atherosclerosis, which is the buildup of fat and plaque on the blood vessel walls. This condition can significantly disrupt the functions of the affected body parts (Sutrisno, 2017). This aligns with research by Sayekti & Sonhaji (2024), which found that reduced blood supply to the back of the brain and midbrain can be a primary cause of muscle weakness. It inhibits the transmission of nerve impulses through major pathways between the brain and spinal cord, which play a crucial role in body coordination and motor function. The nursing problem of physical mobility disorder experienced by Mr. S is caused by a lacunar infarction in the left centrum semiovale, right and left coronad radiata, left caudate nucleus, and pons, marked by weakness (hemiparesis) in the left upper and lower extremities with muscle strength of 1, indicating only muscle contraction without movement. After mirror therapy, there was a change or improvement in muscle strength in Mr. S.

Based on the diagnosis of physical mobility impairment, the client was given mobilization support intervention, specifically the implementation of mirror therapy. Mirror therapy works by providing visual stimulation to the brain through the observation of body movement, which is then translated by the affected body part to mimic the movement, similar to a mirror effect (Sudarsini, 2017). This therapy operates by sending visual stimuli to the

brain through the observation of the functioning body part, which then instructs the brain to perform a series of movements. The application of mirror therapy intervention to increase muscle strength is in line with research by Auliyah et al. (2018), which shows that mirror therapy can enhance motor stimulation in the cortex and spinal cord. This is due to the effects of the Mirror Neuron system. Mirror Neurons play an important role, contributing around 20% of the total neurons in the human brain. Additionally, these neurons are involved in lateral reconstruction, which involves the ability to distinguish between the left and right sides of the body. Further supporting research by Irawandi (2018) indicates that the combination of mirror therapy and increased range of motion (ROM) can influence muscle strength in the upper extremities of stroke patients.

The results of administering mirror therapy to Mr. S on the first day showed that the problem of physical mobility impairment had not been resolved, as he had only had a stroke for two days and was still unable to adapt to the movements during the mirror therapy intervention, so there was no change in muscle strength. On the second day of the intervention, there was an improvement, with Mr. S able to move part of the fingers of his left hand, although the movement was still weak. On the third day of the intervention, there was a significant improvement, with Mr. S beginning to lift some of his fingers and grip his hand, although the movement was still weak. On the fourth day, there was an improvement in hand movements, with Mr. S being able to grip perfectly, with only one finger unable to be lifted. On the fifth day, there was no progress; the hand movements were the same as the fourth day, with perfect grip but still weak, and only one finger unable to be lifted. This was due to a decline in Mr. S's physical condition on the fifth day. Mr. S's family mentioned there was a family issue between Mr. S and his child, which was not explained by the family, causing Mr. S's blood pressure to increase again to 172/98 mmHg. On the sixth day, there was an improvement, with Mr. S being able to grip his hand firmly and lift all his fingers well. On the seventh day, Mr. S seemed reluctant to follow directions to move his hand and fingers, resulting in less optimal movements compared to the sixth day. This was because Mr. S said he was bored with repeating the therapy. To address this issue, motivation was provided so that muscle strength exercises for weakened muscles could be performed continuously, thereby restoring muscle strength. After seven days of mirror therapy intervention, Mr. S's muscle strength was retested, and the result showed an increase in muscle strength from a score of 1 to 3, indicating he could lift his hand against gravity but still could not resist light or heavy resistance.

CONCLUSION

After administering mirror therapy to Mr. S, who has a non-hemorrhagic stroke and symptoms of hemiparesis in the upper and lower left extremities, it can be concluded that mirror therapy is beneficial in improving muscle strength in cases of weakness in non-hemorrhagic stroke extremities. Initially, the muscle strength was rated 1, indicating no movement, only muscle contraction. During the first day of intervention, there was no improvement in hand movement. However, from the second to the fourth day, there was significant improvement, marked by the ability to grip perfectly, with only one finger unable

to be lifted. On the fifth day, there was no improvement due to family issues that the writer could not control. However, on the sixth day, there was significant improvement in hand movement, indicated by the ability to grip firmly and lift all fingers well. On the seventh day, Mr. S seemed reluctant to follow directions to move his hand and fingers, resulting in less optimal movements compared to the sixth day. This was because Mr. S said he was bored with repeating the therapy. To address this issue, motivation was provided so that muscle strength exercises for weakened muscles could be performed continuously, thus restoring muscle strength. After 7 days of mirror therapy intervention, Mr. S's muscle strength was retested, showing an increase from a score of 1 to 3, indicating he could lift his hand against gravity but still could not resist light or heavy resistance

REFERENCE

- Auliyah, H., Farida, H., & Diana, R. (2018). Pengaruh mirror therapy of the face terhadap kemampuan otot wajah pada pasien stroke di RSUD Kabupaten Kediri. *Jurnal ILKES (Jurnal Ilmu Kesehatan)*, 9(1), 1–11. <http://www.ilkeskh.org/index.php/ilkes/index>
- Badan Pusat Statistik. (2019). *Profil Kesehatan Provinsi Jawa Tengah Tahun 2019*. Badan Pusat Statistik.
- Hermanto, Yuniarlina, R., & Hary, S. . (2018). Efektivitas Mirror Therapy Integrasi Dengan ROM Pada Ekstremitas Atas Dan Bawah Terhadap Peningkatan Kekuatan Otot Pasien Stroke Di Rawat Jalan RSUD Dr. Doris Sylvanus Palangka Raya. *Universitas Sari Mulia*.
- Irawandi, D. (2018). Perbedaan Pemberian Kombinasi Terapi Cermin Dan Rom (Mirror Therapy & Range Of Motion) Dengan Rom Terhadap Kekuatan Otot Ekstremitas Atas & Tahap Penerimaan Diri Pada Klien Stroke Dengan Hemiparesis Di Ruang VII Rumkital Dr. Ramelan Surabaya. In *Airlangga Library*. <https://repository.unair.ac.id/78016/>
- Junaidi, I. (2018). *Panduan Praktis Pencegahan Dan Pengobatan Stroke*. Bhuana Ilmu Populer.
- Muttaqin, A. (2018). *Pengantar Asuhan Keperawatan Klien Dengan Gangguan Sistem Persyarafan*. Salemba Medika.
- Pinzon, R., & Asanti, L. (2020). *Awas Stroke: Pengertian, Gejala, Tindakan, Perawatan, Dan Pencegahan* (1st ed.). Andi Offset.
- Riskesdas. (2019). *Prevalensi Stroke Di Indonesia*. Badan Penelitian dan Pengembangan Kesehatan.
- Sayekti, S., & Sonhaji, S. (2024). Pengaruh Miror Therapy Terhadap Kekuatan Otot Pada Pasien Stroke Non Hemoragic Di Rsd Krmt Wongsonegoro Semarang. *NURSING UPDATE: Jurnal Ilmiah Ilmu Keperawatan P-ISSN: 2085-5931 e-ISSN: 2623-2871*, 15(2), 219–224. <https://doi.org/10.36089/nu.v15i2.2110>
- Smeltzer, S., & Bare, B. (2022). *Buku Ajar Keperawatan Medikal Bedah* (8th ed.). EGC.
- Sudarsini. (2017). *Fisioterapi*. Gunung Samudera.
- Sutrisno, A. (2017). *Stroke: You Must Know Before You Get It*. Pt. Gramedia Pustaka Utama.
- World Health Organization. (2019). *Stroke: Cerebrovascular Accident*. Department for Management of NCDs