

Section: General Nursing

Acupressure therapy to improve muscle strength in patient with ischemic stroke

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Abstract

Stroke is a severe cerebrovascular disorder characterized by reduced or obstructed blood and oxygen flow to the brain, which leads to tissue damage and impaired neurological function. Globally, it remains the second leading cause of death and a primary driver of long-term disability. One of the most debilitating consequences of a stroke is motor impairment or hemiparesis; approximately 88% of survivors experience a loss of limb control and reduced muscle strength, which severely impacts their ability to perform Activities of Daily Living (ADL). To address these functional deficits, acupressure serves as an effective non-pharmacological intervention designed to mitigate muscle weakness and restore extremity function. This research employed a single explanatory case study approach to investigate the relationship between acupressure therapy and its effectiveness in improving muscle strength among ischemic stroke patients at Tidar Regional Hospital, Magelang City. Upon the initial assessment, the patient exhibited an upper extremity muscle strength scale of 3. The intervention focused on the scapula area, specifically targeting points LI 15, SI 9, TE 14, GB 21, SI 11, and SI 12. Following consistent therapy over a 3x24-hour period, the patient's muscle strength scale successfully increased to 4. These results suggest that acupressure is a potent supportive therapy that can significantly enhance muscle recovery and functional independence in ischemic stroke patients.

Keywords: Acupressure, complementary therapy, ischaemic stroke, muscle strength, nursing care

Introduction

According to the World Health Organization (WHO), a stroke is a clinical syndrome characterized by rapidly developing signs of focal or global disturbance of cerebral function (Feigin et al., 2025; Donkor, 2018). These symptoms can lead to death or persist for more than 24 hours, with no apparent cause other than vascular origin. Clinically, strokes are categorized into two primary types: ischemic and haemorrhagic (Boehme et al., 2017; Salvadori et al., 2020). Patients suffering from an ischemic stroke often present with severe headaches, aphasia (language impairment), facial palsy, and hemiparesis, which is the weakening of muscles on one side of the body. This hemiparesis frequently leads to impaired physical mobility due to a significant decrease in muscle strength (Khan et al., 2022; Chatterjee et al., 2018). To evaluate these deficits, the Medical Research Council (MRC) Muscle Strength Scale is the most widely accepted clinical tool, rating muscle strength from 0 to 5 based on the patient's ability to resist the examiner's pressure. Acupressure serves as a highly effective non-pharmacological therapy to restore extremity function in these patients (Adam et al., 2014). By stimulating specific points rich in nerve endings and blood vessels, the technique enhances localized blood circulation. This increased blood flow promotes the repair of skeletal and muscular tissues, thereby significantly improving motor function in the affected limbs. As a specialized form of physiotherapy involving targeted massage and stimulation, acupressure is both efficient and relatively safe, offering a non-invasive approach to stroke rehabilitation that avoids skin injury or systemic complications.

This case study is significant for nursing practice because it validates acupressure as a safe, cost-effective, and evidence-based rehabilitation tool for stroke recovery. Since approximately 88% of stroke survivors suffer from motor impairment, nurses need accessible interventions that go beyond standard pharmacological care. By documenting a shift from a muscle strength scale of 3 to 4, this study demonstrates that nurses can directly influence motor functional recovery through targeted stimulation of nerve endings and blood vessels. Furthermore, this case study highlights the nurse's role in holistic rehabilitation, showing how non-invasive techniques can reduce long-term disability and improve a patient's ability to perform Activities of Daily Living (ADL). It empowers nurses to act as specialized practitioners who can provide "bedside physiotherapy," facilitating faster recovery and increasing the patient's independence. Ultimately, this research provides a clinical framework for integrating integrative medicine into traditional stroke protocols, ensuring a more comprehensive approach to neurological nursing care.

Case Description

Nursing care focused on the application of acupressure to increase muscle strength was carried out on Mrs. E, aged 50 years, who was treated in the Alamanda 1 Room of Tidar Magelang Regional Hospital with a medical diagnosis of Non-Hemorrhagic Stroke (SNH) or ischemic stroke. The patient is a housewife, residing in the Mertoyudan area of Magelang Regency, and came to the hospital on June 3, 2025 after suddenly feeling weak and falling down in the kitchen. Upon arrival at the hospital, the patient was conscious with a GCS score of 15 (E4 V5 M6), but experienced weakness in her left limbs and was still able to walk with the help of her family. The muscle strength of the upper and lower left extremities = 3, while the muscle strength of the upper and lower right extremities = 4. Supporting examination in the form of a non-contrast head CT scan showed multiple lacunar infarctions of the bilateral basal ganglia and corona radiata dextra. Vital signs when assessed were blood pressure 156 / 110 mmHg, pulse 86 x/minute, temperature 36.5 oC, respiration 20 x/minute.

Discussion

The data obtained were Mrs. E. came to the hospital with complaints of suddenly feeling weak and falling down sitting in the kitchen. When arriving at the hospital, the patient was in a state of *compost mentis* consciousness with GCS 15 (E4 V5 M6), but experienced weakness in the left limbs and the patient was still able to walk by being dragged and assisted by the family. Muscle strength assessment obtained a value of 3 for the left upper and lower extremities while the right upper and lower extremities were 4. Based on the results of the client's assessment, the main complaints were weakness of the left limb, feeling weak, difficulty walking, and limitations in performing daily activities. The author diagnosed a case of impaired physical mobility related to decreased muscle strength. This is in line with the opinion that blockage of blood vessels in stroke can cause decreased motor function (Kuriakose & Xiao, 2020; Premilovac & Sutherland, 2023). The occurrence of decreased motor function can cause a person to experience impaired physical mobility. After 3 x 24 hours of action, it is expected that physical mobility (L. 05042) will increase with the outcome criteria, increased extremity movement, increased muscle strength, increased joint range of motion (ROM). Management is focused on increasing blood flow to the brain and preventing increased intracranial pressure by using Mobilization Support interventions (I.05173). In the observation section, identify the presence of pain or other physical complaints, identify physical tolerance for movement, monitor heart rate and blood pressure before starting mobilization. In the therapeutic section, mobilization activities can be facilitated with assistive devices (e.g., bed railings), facilitate movement, involve the family to help patients improve movement, teach acupressure techniques in the scapula area, namely point LI 15, point SI 9, point T E 14, point GB 21, point SI 11 and point SI 12 with the aim of increasing upper limb muscle strength. For the education section, explain the purpose and procedures of mobilization, encourage early mobilization, and teach simple mobilization techniques (e.g., sitting in bed, sitting on the side of the bed, moving from bed to chair). Research highlights that nursing interventions, such as Range of Motion (ROM) exercises, physical therapy, and support in daily activities, are crucial in addressing physical mobility impairments (Hosseini et al., 2019; Beebe & Lang, 2009).

In the diagnosis of impaired physical mobility related to decreased muscle strength, the implementation is carried out in accordance with the nursing plan, namely identifying the presence of pain or other physical complaints, identifying physical tolerance for movement, monitoring general conditions during mobilization, facilitating mobilization, facilitating movement, namely by performing acupressure on the upper extremities of the scapula or shoulder at point LI 15, point SI 9, point T E 14, point GB 21, point SI 11 and point SI 12. As stated, acupressure points in the scapular region have a very close relationship with trigger points to improve upper extremity function (Huang et al., 2022; Nascimento et al., 2022). Trigger points are sensitive points that, when pressed, will cause pain in a place far from the point. This point is where local degeneration in muscle tissue is caused by muscle spasms, trauma, endocrine imbalances, and muscle imbalances. The evaluation obtained in Mrs. E was diagnosed with impaired physical mobility related to decreased muscle strength which had been given the implementation of acupressure therapy for 3x24 hours with the final result being resolved marked by a fairly increased upper extremity muscle strength, namely with the initial muscle strength of the left hand = 3 to muscle strength = 4. Mrs. E, was able to lift her left arm and was able to withstand the limited movement resistance quite decreased and her fingers could grip a little and she was able to eat independently. This proves that acupressure in the scapula area can increase upper extremity muscle strength in ischemic stroke patients who experience impaired physical mobility. Studies found that acupressure can improve upper extremity muscle strength scores in respondents who experienced muscle weakness due to hemiparetic stroke (Wang et al., 2025; Wang et al., 2014; Ke et al., 2025).

In a clinical case study focusing on the use of acupressure therapy to improve muscle strength in ischemic stroke patients, the role of a nurse is multifaceted, bridging the gap between traditional medical management and holistic, evidence-based rehabilitation. Ischemic stroke occurs when a blood clot blocks arterial flow to the brain, leading to localized tissue hypoxia (oxygen deprivation), neuronal damage, and subsequent hemiparesis or muscle weakness. Nurses serve as the primary clinical assessors, utilizing standardized tools like the Medical Research Council (MRC) Manual Muscle Testing to establish a patient's baseline strength before any intervention. As direct care providers, nurses perform the acupressure therapy by targeting specific neuromuscular meridian points—such as Large Intestine 11 (LI11) or Stomach 36 (ST36)—to stimulate local sensory nerves and blood circulation.

Mechanistically, this cutaneous stimulation triggers the release of endorphins and histamines, which promote vasodilation, reduce localized muscle spasticity, and facilitate cortical reorganization (neuroplasticity) in the brain. Beyond physical administration, the nurse acts as a patient educator and advocate, teaching family members how to safely replicate these touch-pressure techniques to ensure continuity of care after hospital discharge. Finally, as an investigator in the case study, the nurse is responsible for meticulous documentation, monitoring the patient for adverse reactions, and objectively analysing post-intervention data to determine if acupressure significantly accelerates motor recovery compared to standard physiotherapy alone.

Conclusion

The author implemented non-pharmacological therapy, acupressure, to increase muscle strength. The acupressure therapy was administered over three days. The author administered the therapy over three visits. The evaluation results during 3 visits, starting from June 3, 2025 to June 5, 2025, showed that after the acupressure technique was performed, the patient's muscle strength scale increased from a scale of 3 on the first visit to a scale of 4 on the last visit. It can be concluded that acupressure therapy on the upper extremity of the scapula or shoulder at the LI 15-point, SI 9-point, TE 14-point, GB 21-point, SI 11-point and SI 12-point can increase upper extremity muscle strength in ischemic stroke patients. Suggestions for health workers to provide nursing care, especially in handling physical mobility disorders in ischemic stroke patients using acupressure therapy so that health workers are motivated to carry out preventive and treatment measures for patients who experience physical mobility disorders.

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