

Section: General Nursing

The use of effortful swallowing to deal nutritional problem in patient with ischaemic stroke who also experiencing dysphagia

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Abstract

Stroke is a leading cause of disability and death, with dysphagia being one of its most frequent complications. Dysphagia can result in decreased nutritional intake and an increased risk of aspiration. Nursing interventions such as Effortful Swallowing can help improve swallowing ability in stroke patients. This case study evaluates the effectiveness of Effortful Swallowing therapy in improving swallowing ability and nutritional status in non-hemorrhagic stroke patients with dysphagia. The case study was conducted on Mrs. I, a 50-year-old woman diagnosed with non-hemorrhagic stroke and dysphagia. The assessment included neurological condition, swallowing ability, and nutritional status. Nursing interventions were carried out over three days and included nutritional management, aspiration prevention, family education, and Effortful Swallowing therapy administered twice daily. Evaluation was performed using the FOIS (Functional Oral Intake Scale). After three days of intervention, improvements were observed in swallowing ability, reduced coughing during meals, and increased food intake. The FOIS score improved from level 3 (minimal oral intake) to level 5 (oral intake with dietary restrictions—soft/thick liquid texture—without requiring additional nutritional support). The patient was able to finish one serving of smooth porridge without coughing or hoarseness. Effortful Swallowing therapy proved effective in improving swallowing function and nutritional status in stroke patients with dysphagia, while also preventing aspiration complications. This intervention can be implemented as an evidence-based nursing practice (EBP) in dysphagia rehabilitation. Active involvement of both family members and nurses is crucial for the success of therapy.

Keywords: Dysphagia, effortful swallowing, nursing care, nutrition, stroke

Introduction

Stroke is a disease caused by a sudden disruption of blood flow to the brain, leading to an inadequate supply of nutrients and oxygen to neurons and brain cells (Kuriakose & Xiao, 2020). The World Health Organization (WHO) defines stroke as the rapid development of clinical signs of focal or global brain dysfunction that can result in death or persistent impairment lasting more than 24 hours, with no cause other than vascular disease (Donkor, 2018). Strokes are classified into two main types: ischemic stroke, which is caused by a clot blocking blood flow to the brain, and haemorrhagic stroke, which occurs when a blood vessel ruptures, obstructing blood flow to the brain. According to data from the World Stroke Organization (WSO), there are 13.7 million new cases of stroke annually, resulting in approximately 5.5 million deaths. The WHO reported that in 2019, stroke accounted for 55% of the 55.4 million deaths worldwide. The global prevalence of stroke increased by 85%, with a 70% rise in stroke incidents and a 43% increase in stroke-related deaths (Feigin et al., 2025). Indonesia is a significant contributor to stroke incidents and deaths among Asian countries. The estimated incidence of stroke in Indonesia is between 800 and 1,000 new cases annually, with its prevalence increasing from 7% per 1,000 population in 2013 to 10.9% per 1,000 population in 2018 (Leman et al., 2025). One common clinical symptom of stroke is difficulty swallowing, known as dysphagia. While dysphagia can stem from various factors such as other neurological conditions, local trauma, tissue damage, or obstructions in food and fluid passages, it is also one of the most common consequences of acute stroke. This difficulty in swallowing can lead to serious complications including pneumonia, aspiration, and malnutrition. The high incidence of dysphagia in stroke patients significantly increases the risk of aspirating fluids and food into the respiratory tract. This can lead to aspiration pneumonia and prolong hospital stays. Beyond extending hospitalization, dysphagia also contributes to nutritional deficits; studies show that stroke patients with dysphagia are three times more likely to experience nutritional deficiencies compared to other stroke patients without the condition. These nutritional deficits, caused by the inability to adequately swallow food, can directly impact recovery time, worsen body function, and increase mortality rates.

Dysphagia is an independent risk factor for malnutrition, poor functional recovery, and post-stroke depression. The inability to meet adequate nutritional and fluid needs puts patients at risk of decreased nutritional and

hydration levels due to swallowing limitations and complications from stroke. The fundamental role of swallowing is to move food from the mouth to the esophagus and initiate digestion. It also helps clear the oral cavity of saliva and prevents food from entering the respiratory tract. Because the oropharynx is a shared passageway for breathing and swallowing, reflexes must be present to ensure respiratory tract protection during swallowing. Nursing interventions for swallowing disorders in stroke patients that lead to nutritional deficits can include various direct and indirect swallowing exercises. One such intervention is Effortful Swallowing, a therapy exercise where the patient is asked to swallow while firmly pressing their tongue against the roof of the mouth and "pressing hard" with their swallowing muscles.

Research showed that performing Effortful Swallowing Exercise for three consecutive days improved patients' swallowing muscle strength (Söyler et al., 2025). On the third day, patients were able to eat a full portion of strained porridge without choking. Effortful swallowing therapy effectively improves swallowing function in dysphagia rehabilitation by activating and strengthening various oropharyngeal muscles, including the tongue and suprahyoid muscles, and by increasing intraoral pressure during swallowing. A preliminary study at Tidar Regional Hospital, Magelang City, revealed that from January to March 2025, there were 376 cases of non-hemorrhagic stroke, with 67 cases in March. The medical records from TIDAR Regional Hospital showed that in Dahlia Ward 3, five cases of non-hemorrhagic stroke occurred in March, with three of these five patients experiencing dysphagia. Nurses play a crucial role in caring for stroke patients with dysphagia. As care providers, they are obligated to help patients maintain and restore health, manage illness and symptoms, and achieve maximum function and independence throughout the healing process. Based on these issues, the author is interested in researching the application of effortful swallowing therapy in stroke patients who experience dysphagia with nutritional deficit problems, aiming to determine its effect.

Case Description

Mrs. I, a 50-year-old woman, was admitted to Dahlia Room 3 at Tidar Hospital, Magelang, with a medical diagnosis of non-hemorrhagic stroke (SNH) secondary to diabetes. She is a housewife residing in Magelang. On February 26, 2025, she was found unconscious in the kitchen by her family and brought to the hospital. Upon arrival, she was conscious (GCS 15) but experienced right-sided weakness and slurred speech. Her family reported that prior to the incident, she had complained of dizziness, nausea, and difficulty communicating. Although there is a family history of hypertension, the patient herself had no prior history of hypertension or diabetes. On examination, the patient appeared weak and spent most of her time in bed in a semi-Fowler's position. She measured 158 cm in height and weighed 52 kg (BMI 20.82 kg/m²). Her initial blood pressure was 180/101 mmHg, and antihypertensive therapy with Nicardipine drip was administered via syringe pump. A non-contrast CT scan of the head revealed a lacunar infarct in the left basal ganglia and left periventricular area, without evidence of intracerebral haemorrhage. The patient was placed on a pureed, low-salt porridge diet but showed signs of dysphagia, including food remaining in the oral cavity, coughing during meals, and spitting out food. She was only able to consume about three bites per meal, requiring full assistance from family or nursing staff. Laboratory results showed very high blood sugar levels (302 mg/dL) and low albumin (2.86 g/dL), indicating nutritional deficits. Other parameters were within normal limits except for elevated platelets (649,000/ μ L) and urea (45.4 mg/dL). Clinically, the patient appeared anxious, had impaired communication, and was highly dependent on her family for daily activities. No respiratory distress was observed.

Nursing Diagnoses (SDKI) are nutritional deficit related to inability to swallow food (D.0019) and swallowing disorder related to cranial nerve impairment (D.0063). For the nutritional deficit, the primary intervention was Nutritional Management (I.03119) supported by Swallowing Therapy (I.03144). This included monitoring nutritional status, food intake, weight, and laboratory results. Oral hygiene was performed before meals, food was served attractively at appropriate temperatures, and a high-calorie, high-protein diet with supplements was provided. The patient was taught proper eating positions, such as sitting upright and avoiding talking while eating. Collaboration with a nutritionist was carried out to determine nutrient types and amounts, and antiemetic medication was administered if needed. For the swallowing disorder, the main intervention was Aspiration Prevention (I.01018). Nursing care included monitoring consciousness, swallowing ability, respiratory status, and breath sounds after meals. The patient was positioned in semi-Fowler's (30–45°) before and after eating. Food was provided in small, soft portions, and medications were given in liquid form. Airway maintenance techniques such as jaw thrust and head-tilt chin-lift were applied when necessary. Education was provided on safe swallowing techniques and aspiration prevention strategies.

Effortful Swallowing therapy was implemented for three days, with two sessions daily (morning and afternoon, each lasting 30 minutes). The therapy was performed when the patient was conscious, able to follow commands, and capable of independent coughing. The technique involved instructing the patient to swallow while pressing the tongue firmly against the palate. Observations focused on aspiration symptoms, tongue movement during eating, and signs of fatigue. Education was also provided to the patient and family regarding the technique and its benefits. Evaluation was conducted using the FOIS (Functional Oral Intake Scale). After three days of intervention, the following outcomes were observed: improved swallowing ability (increased food intake, no food remaining in the mouth), reduced frequency of coughing and choking during meals, improved body weight and nutritional intake, increased FOIS score, greater patient confidence while eating, with improved chewing and swallowing effectiveness.

Discussion

A thorough assessment was conducted on Mrs. I, a 50-year-old woman admitted to Dahlia Room 3 at Tidar Magelang Regional Hospital. She had been diagnosed with a non-haemorrhagic stroke secondary to diabetes mellitus. Mrs. I was found unconscious at home by her family and presented to the hospital with a Glasgow Coma Scale (GCS) of 15 (compos mentis), but exhibited right-sided hemiparesis and dysarthria (slurred speech). A head CT scan revealed a lacunar infarction in the left basal ganglia and left periventricular region, with no signs of haemorrhage. Her Body Mass Index (BMI) was 20.82 kg/m², but she displayed clear signs of dysphagia, including food retention in the mouth, choking, and coughing during meals, resulting in very minimal nutritional intake. Laboratory findings supported a diagnosis of nutritional deficit, with low albumin levels (2.86 g/dL) and very high blood glucose (GDS of 302 mg/dL). The assessment also indicated impaired daily communication activities and anxiety regarding her health condition. These findings are reinforced by literature emphasizing that strokes with basal ganglia lesions can cause dysphagia, and that early detection and intervention for dysphagia are crucial to prevent aspiration and nutritional deficits (Qin et al., 2023; González-Fernández et al., 2013). The identification of swallowing disturbances and poor nutritional status in this patient forms a critical basis for designing appropriate nursing care interventions.

Based on the analysis of subjective and objective data, the primary nursing diagnosis established is 'Nutritional Deficit related to inability to swallow food.' This diagnosis aligns with major symptoms identified by SDKI (PPNI, 2017), including inadequate food intake, decreased body weight, and abnormal laboratory results such as low albumin levels. The secondary diagnosis is 'Swallowing Disorder related to cranial nerve disturbance.' This is evidenced by coughing during meals, food retention in the mouth, and CT-Scan results showing lesions in brain areas responsible for swallowing motor control. Both diagnoses are closely related and form the main focus of nursing intervention. This data clearly indicates that the patient is experiencing dysphagia, which in turn exacerbates their nutritional status. Therefore, interventions must not only support nutritional intake but also directly address the underlying swallowing disorder.

Our nursing care approach for Mrs. I primarily focused on two main interventions: nutrition management and aspiration prevention. We also included supportive interventions, specifically the 'Effortful Swallowing' exercise. This was implemented for three consecutive days, twice daily. Effortful Swallowing Therapy aims to increase oropharyngeal muscle strength and improve neuromuscular swallowing coordination. Using the FOIS scale for evaluation, we observed an improvement in her swallowing ability, moving from level 2 to level 4. Mrs. I no longer choked, was able to swallow smooth porridge almost a full portion without coughing, and her voice did not sound hoarse after eating. These findings align with a study which stated that Effortful Swallowing can significantly increase oral intake (Nekl et al., 2012). Further theoretical support from studies that this exercise activates the tongue and suprahyoid muscles to efficiently push the food bolus into the oesophagus and optimally open the Upper Oesophageal Sphincter (UES) (Chilwan et al., 2026; Lee et al., 2025). This intervention has proven to be an effective non-invasive rehabilitation technique for improving the swallowing quality and nutritional status of post-stroke patients.

Nurses play a crucial role in dysphagia rehabilitation, as they are uniquely positioned to teach, supervise, and evaluate intervention techniques directly. In this specific case, the family's active involvement, providing both food and emotional support, also contributed significantly to the successful implementation of the intervention. This comprehensive case study utilized NANDA's 13-domain approach and employed data triangulation through interviews, direct observations, and objective data collection from laboratory and radiological examinations. The active participation of nurses in observation and implementation further enhanced the accuracy of case management. All identified nursing diagnoses were successfully addressed, aligning with the intervention's objectives and demonstrating clinical improvements in swallowing and nutritional status. The innovative, evidence-based approach using "Effortful Swallowing" is a notable highlight, marking the success of dysphagia rehabilitation. However, there were limitations in the evaluation, particularly the use of the FOIS tool, which is subjective and doesn't specifically assess biomechanical aspects. This presents an opportunity for future studies to incorporate more comprehensive evaluation tools, such as VFSS (Videofluoroscopic Swallowing Study), for more accurate assessments. Additionally, patient management still relies heavily on the dedication of nurses and family support, emphasizing that success is greatly dependent on effective collaboration among the healthcare team and caregivers.

Conclusion

Study results in non-hemorrhagic stroke patients with dysphagia show that comprehensive assessment can identify swallowing disturbances, nutritional deficits, and the presence of cranial nerve disorders affecting the swallowing process. The main nursing diagnoses established include nutritional deficits and swallowing disorders. Implementing interventions such as nutrition management, aspiration prevention, family education, and providing Effortful Swallow therapy over three days yielded positive results. Patients demonstrated improved swallowing ability, increased food consumption, decreased choking and coughing during meals, and an improvement in the FOIS scale from level 3 to level 5. Families also became capable of independently guiding swallowing exercises. The application of Effortful Swallow therapy proved effective in increasing nutritional intake and preventing aspiration. These findings indicate that an evidence-based practice (EBP) approach can be optimally implemented in nursing practice for post-stroke dysphagia rehabilitation. For future studies, it is recommended to use more objective evaluation methods like

videofluoroscopy to assess the effectiveness of swallowing exercises and to consider long-term interventions to maintain the achieved results.

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