CASE STUDY

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The application of oral hygiene using Betadine mouthwash to enhance self-care in patients with non-hemorrhagic stroke (NHS) in the ICU at Bhayangkara Hospital Makassar.

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ABSTRACT
Background: Stroke is a disorder of cerebral circulation that results in sudden neurological deficits due to ischemia or hemorrhage. According to SIKI, interventions for Self-Care Deficit nursing problems include oral hygiene treatment using Betadine mouthwash, which is an independent nursing intervention.
Objective: This study aimed to explore the impact of oral hygiene treatment using Betadine mouthwash in patients with Non-Hemorrhagic Stroke (NHS) and Self-Care Deficit nursing problems in the nursing unit at Bhayangkara Hospital Makassar.
Methods: A qualitative descriptive case study design was used, involving a single patient with NHS and Self-Care Deficit nursing problems. Oral hygiene treatment with Betadine mouthwash was administered over a period of 3 days to provide comfort and promote healing.
Results: Evaluation results showed improvements after 3 days of oral hygiene care using Betadine mouthwash. The patient had no bad breath (1), felt comfortable in the teeth and mouth (5), had visibly cleaner teeth and mouth (5), saw improvement in lip mucosa (5), and consistently maintained oral hygiene (5).
Conclusion: Oral hygiene treatment with Betadine mouthwash effectively improved oral health and self-care in patients with Non-Hemorrhagic Stroke (NHS) and Self-Care Deficit nursing problems.
Keywords: Self-Care Deficit, Oral Hygiene Treatment, Non-Hemorrhagic Stroke (NHS)

INTRODUCTION

Each year, 15 million people worldwide suffer from stroke, with 5 million deaths and 5 million others experiencing permanent disabilities (Lindsay et al., 2019). The 2018 Basic Health Research (Riset Kesehatan Dasar) reported a stroke prevalence in Indonesia of 10.9%, which is estimated to be 2,120,362 individuals. The highest incidence occurs in individuals aged 75 and older (50.2%), with more cases seen in men (11%) compared to women (10%). In Aceh, the stroke prevalence is 7.8%, which equates to approximately 13,389 individuals (Riskesdas, 2018).

Stroke is a disorder of cerebral blood circulation that causes sudden neurological deficits due to ischemia or hemorrhage of brain nerve circulation (Nurarif, 2015). According to the World Health Organization (WHO), stroke is defined as an acute disruption of blood flow to the brain that occurs suddenly and results in disability, paralysis of limbs, or death after more than 24 hours from the attack. Indonesia is one of the countries in Asia with an increasing number of stroke cases, making it a significant health issue that requires government attention. Stroke treatment, which requires long recovery times and high costs, leads to an increase in morbidity and mortality rates, thus adversely affecting the nation's economy and productivity. The prevalence of stroke in Indonesia, according to Riskesdas in 2018, was 10.9%, with a 3.9% increase over the past five years. The highest prevalence is generally found in individuals aged 75 and older (50.2%), with 12.6% of cases occurring in urban areas (Tarwoto & Putra, Raden Achmad Candra, 2025).

According to data from the medical team at a hospital in South Sulawesi, there were 729 stroke patients in 2017, 691 in 2018, and 78 from January to April 2020 (Leman et al., 2025). At Bhayangkara Hospital Makassar in 2021, 38 stroke patients were diagnosed and received outpatient care, while 17 patients required inpatient care.

Hemorrhagic stroke is caused by uncontrolled hypertension, arteriovenous malformations, and aneurysms (Murphy & Werring, 2020). This condition leads to sudden severe headaches, loss of consciousness, increased intracranial pressure, vomiting, seizures, and neurological deficits such as motor loss (hemiplegia, hemiparesis), communication loss (dysarthria, aphasia, apraxia), swallowing difficulties, and vision impairment. Studies show that hemorrhagic stroke presents with worse clinical symptoms and functional status compared to ischemic stroke. Patients with hemorrhagic stroke require longer and more intensive inpatient care during both the acute phase and rehabilitation (Salvadori et al., 2020). Early management of hemorrhagic stroke is crucial, given the rapid expansion of bleeding, which can lead to sudden loss of consciousness, neurological dysfunction, and complications such as cerebral edema, pneumonia, urinary tract infections, deep vein thrombosis (DVT), pressure ulcers, and even death, all of which worsen the patient's condition (Murphy & Werring, 2020).

Stroke patients may experience difficulty swallowing, requiring food to be delivered through a tube and rarely changing saliva. Oral hygiene is essential for refreshing, cleaning, and preventing infection in the mouth. Performing oral hygiene for

stroke patients can reduce the number of microorganisms and the accumulation of organisms that undergo translocation and colonization in the mouth. Oral hygiene should be performed to reduce the risk of secondary hospital infections and prevent oral health problems in stroke patients. Maintaining oral hygiene is a responsibility that nurses must fulfill when the patient is unable to meet this need (Mekuo, Tahiruddin, & Ananda, 2022).

METHODS

This study used a case study design to explore the issue of Self-Care Deficit Nursing Care at Bhayangkara Hospital Makassar. The research was conducted at Bhayangkara Hospital Makassar from February to May 2023. The subjects of this study were clients with Non-Hemorrhagic Stroke (NHS) who had Self-Care Deficit nursing problems, along with inclusion and exclusion criteria. Data were collected using a medical-surgical nursing assessment tool to obtain the desired data, as well as an evaluation form to assess the success of the nursing interventions.

RESULT

Respondent Description

Patient Ms. "N", 65 years old, with medical record number 350812, female, Muslim, a housewife, married, was admitted to Bhayangkara Hospital Makassar on May 18, 2023, with a diagnosis of Non-Hemorrhagic Stroke (NHS).

Assessment Results

The assessment of patient Ms. "R", a 65-year-old female who underwent surgery for Non-Hemorrhagic Stroke (NHS), revealed her main complaint of weakness. The patient was unable to perform self-care tasks independently, including dressing, eating, bathing, using the toilet, and grooming herself. She had not received any oral care during her hospitalization. The patient also reported discomfort with her oral condition, including cracked lips and pain around her lips. According to her family, the patient had not bathed during her hospital stay, contributing to her discomfort.

Upon observation, the patient was found to be weak, which prevented her from performing self-care independently. She appeared to be uncomfortable, especially in the mouth area. Her lips were cracked, and both her teeth and mouth were dirty and unkempt. A physical examination was conducted, and laboratory results were obtained, which showed the following: WBC of 8.50x10^3/PL, RBC of 5.60x10^3/PL, HGB of 17 g/dL, HCT of 50.2%, and PLT of 3.30x10^3/PL. The blood clotting time (CT) was 7 minutes, while the bleeding time (BT) was 2.3 minutes. The random blood glucose level (GDS) was 67 mg/dL, and the immunoserology tests were non-reactive for HBsAg and HIV.

The treatment provided to the patient included intravenous fluids (RL) at a rate of 20 drops per minute, Amiodarone 600 mg per 24 hours, and Furosemide 10g per 24 hours.

Problem Identification

Based on the assessment results, the primary nursing problem identified was a Self-Care Deficit related to physical injury, as evidenced by:

Subjective Data (SD): The patient's family reported weakness and discomfort because the patient had not bathed during her hospital stay. The family also mentioned that the patient had never performed self-care before, and the patient expressed discomfort with her oral condition.

Objective Data (OD): The patient was unable to perform self-care independently, appearing unable to dress, eat, bathe, use the toilet, or groom herself. The patient had not received any oral care during her hospitalization and reported discomfort with her mouth, including cracked lips and pain around her lips.

Intervention Implementation Description

Oral hygiene intervention using Betadine was carried out on the patient for three consecutive days to assess the effectiveness of the Betadine solution for oral hygiene application. The steps taken included explaining the procedure to the patient and discussing it, adjusting the bed to a comfortable position (Semi Fowler), placing a towel on the patient's chest, wearing clean gloves, and applying toothpaste to the toothbrush. The toothbrush was held over an emesis basin, a small amount of water was added to the toothpaste, and the brush was positioned at a 45-degree angle to the gum line, ensuring the bristles touched and penetrated the gum line. The inner and outer surfaces of the upper and lower teeth were brushed from the gum to the crown of each tooth. The biting surfaces of the teeth were cleaned by holding the top of the bristles parallel to the teeth and gently brushing forward and backward. The sides of the teeth were brushed by moving the bristles back and forth. The patient was allowed to rinse with Betadine mouthwash, the mouth was thoroughly rinsed with cold water, and the patient spit it into the basin. The process helped clean the patient’s mouth and the equipment was tidied up afterward.

Evaluation of the Intervention Implementation

After performing oral hygiene care for three consecutive days, the evaluation results showed changes in the patient's condition:

On the first day, May 22, 2023, before the oral hygiene intervention, the patient's mouth had a noticeable odor (fairly increased), the client felt discomfort in the mouth (fairly increased), the teeth and mouth appeared dirty (increased), the lips were cracked (worsened), and the client did not maintain oral hygiene (worsened). After the oral hygiene intervention, the results were: the mouth smelled less (moderate), the client started feeling somewhat comfortable (moderate), the teeth and mouth became less dirty (moderately increased), the cracked lips

started to improve (moderately worsened), and oral hygiene was not fully maintained (moderately worsened).

On the second day, May 23, 2023, before the oral hygiene intervention, the mouth had less odor (moderately decreased), the client began feeling more comfortable (moderately decreased), the teeth and mouth were becoming cleaner (decreased), the lips appeared drier (slightly improved), and oral hygiene was occasionally performed (moderate). After the intervention, the results were: the mouth smelled less (moderate), the client felt somewhat comfortable (moderate), the teeth and mouth became less dirty (moderately increased), the cracked lips improved slightly (moderately worsened), and oral hygiene was still not fully maintained (moderately worsened).

On the third day, May 24, 2023, before the oral hygiene intervention, the mouth had a slight odor (moderate), the client felt somewhat comfortable (moderate), the teeth and mouth were less dirty (moderately increased), the cracked lips improved slightly (moderately worsened), and oral hygiene was not fully maintained (moderately worsened). After the oral hygiene intervention, the results showed that the self-care deficit was resolved, with the following indicators: no bad breath (1), the client felt comfortable in their teeth and mouth (5), the teeth and mouth appeared clean (5), the lip mucosa improved (5), and the client consistently maintained oral hygiene (5).

Table 1 *Evaluation of the Implementation of Oral Hygiene with Betadine*

No.	Outcome Criteria	Day I - April 2, 2023		Day II - March 29, 2023		Day III - March 30, 2023	
		Before Intervention	**After Intervention**	**Before Intervention**	**After Intervention**	**Before Intervention**	**After Intervention**
1.	Bad Breath	**4 (Fairly Increased)**	**3 (Moderate)**	**3 (Moderate)**	**2 (Fairly Decreased)**	**2 (Fairly Decreased)**	***1 (Improved)***
2.	Discomfort	**2 (Fairly Increased)**	**3 (Moderate)**	**3 (Moderate)**	**2 (Fairly Decreased)**	**4 (Fairly Decreased)**	**5 (Improved)**
3.	Oral Hygiene	**1 (Increased)**	**2 (Fairly Increased)**	**3 (Moderate)**	**3 (Decreased)**	**4 (Decreased)**	**5 (Improved)**
4.	Lip Mucosa	**1 (Worsened)**	**2 (Fairly Worsened)**	**3 (Moderate)**	**4 (Fairly Improved)**	**4 (Fairly Improved)**	**5 (Improved)**
5.	Maintaining Oral Hygiene	**1 (Worsened)**	**2 (Fairly Worsened)**	**2 (Fairly Worsened)**	**2 (Moderate)**	**4 (Fairly Improved)**	**5 (Improved)**

DISCUSSION

This assessment primarily identified data after the patient's post-operative phase, with the main complaint being a Self-Care Deficit, specifically regarding Oral Hygiene. The purpose was to provide comfort and improve the physiological condition of the mouth, thus aiding the overall health of the patient systematically and accurately by analyzing the major and minor signs and symptoms, leading to a nursing diagnosis. During the assessment, the main complaint was identified: The client, Ny. "R", a 65-year-old female post-op patient with Non-Hemorrhagic Stroke (NHS), presented with weakness as the primary complaint. The client was unable to perform self-care activities independently, such as dressing, eating, bathing, using the toilet, and grooming. The client had never received oral care during her hospitalization and felt discomfort with her oral condition, including cracked lips and pain in the lip area.

According to a study by Pinto, Ninfole, Benedetti, Marzioni, & Maroni, (2021), in a dental hygiene assessment, it was found that the patient had poor dental hygiene, with signs of tartar, dental caries, broken teeth, incomplete teeth, or dentures. Another study by Maisser et al., (2021)found that after an anamnesis, the patient complained of food often getting stuck in the lower right molars for the past two weeks. The patient had no previous medical issues and had received dental care at school dental health services. The patient lacked knowledge about proper dental care and brushed her teeth once a day after breakfast using the Fones method, which involved a circular motion on the molars and labial surface, while the inner surface was scraped.

Oral hygiene interventions using Betadine were applied to the patient for three consecutive days to evaluate the effectiveness of Betadine solution in oral hygiene application. The steps involved explaining the procedure to the patient and discussing it, adjusting the bed to a comfortable semi-Fowler position, placing a towel on the patient's chest, wearing clean gloves, and applying toothpaste to the toothbrush. The toothbrush was held over an emesis basin, with a small amount of water added to the toothpaste. The bristles were positioned at a 45-degree angle to the gum line, ensuring the tips penetrated and made contact with the gum line. The inside and outside surfaces of the upper and lower teeth were brushed from the gum to the crown of each tooth, cleaning the chewing surfaces by positioning the bristles parallel to the teeth and gently brushing back and forth. The sides of the teeth were cleaned with a forward-and-back motion, after which the patient was asked to rinse with Betadine mouthwash, rinse thoroughly with cold water, and spit into the basin. The mouth was cleaned, and the tools were tidied up.

Interventions usually performed to address poor oral cavity hygiene involve oral hygiene. Oral hygiene is a necessary nursing intervention to maintain a clean and fresh oral cavity, preventing infections. Oral hygiene actions are essential for preventing events like Ventilator-Associated Pneumonia (VAP), as oral hygiene refreshes, cleans, and protects the mouth from harmful bacteria (Bharati & Suresh, 2017).

For patients unable to perform personal care independently, inadequate oral care may lead to xerostomia (dry mouth). This condition causes local tissue inflammation due to an increase in plaque buildup and a decrease in the ability to clean debris in the mouth. The inflammation causes a reduction in the defense function of the mucosa. According to Ligtenberg & Almståhl, (2015), antiseptic agents such as Chlorhexidine (concentration 0.12%-0.2%) can be used in oral hygiene. Chlorhexidine is an antiseptic used to treat and prevent gingivitis. The recommended position for oral hygiene is 30 degrees or semi-recumbent with a tilted position to prevent aspiration. Oral hygiene should be performed at least twice a day, including tooth brushing and using Chlorhexidine.

To measure the effectiveness of oral hygiene, the researcher used the Oral Assessment Guide (OAG), developed by Eiler et al., as the most reliable and clinically beneficial measurement tool. The analysis results of this study indicate that most patients experienced moderate disturbances.

According to Lee, Marc O'Donnell, & Kuo, (2024), the use of Chlorhexidine in oral hygiene was effective in reducing halitosis in stroke patients. This is due to Chlorhexidine being classified as a broad-spectrum antimicrobial agent with significant effectiveness and safety in improving oral health. Chlorhexidine is absorbed by the tooth surface and the mucin in saliva, inhibiting plaque formation, which, if left untreated, serves as a breeding ground for bacteria.

A study by Widani & Nasution, (2016), titled "Comparison of Oral Care Using 1% Povidone Iodine and 0.2% Chlorhexidine Against Bacteria Count in the Mouth of Patients with Decreased Consciousness," also indicated that Chlorhexidine significantly reduced all oral microbes.

CONCLUSION

After conducting a case study using the nursing process approach at Bhayangkara Hospital Makassar from April 6th to 8th, 2023, and applying deep breathing relaxation therapy on Mr. R, a post-operative appendicitis patient, it was concluded that the implementation of Oral Hygiene interventions using Betadine was highly effective in reducing the nursing problem of Self-Care Deficit in a Non-Hemorrhagic Stroke (NHS) patient.

After applying Oral Hygiene care for three consecutive days, the following results were observed: the self-care deficit was addressed with indicators showing no bad breath (1), the client felt comfortable with the teeth and mouth (5), the teeth and mouth appeared cleaner (5), the mucous membrane of the lips improved (5), and the client consistently maintained oral hygiene (5).

For Non-Hemorrhagic Stroke (NHS) patients, especially those experiencing pain, the implementation of deep breathing relaxation therapy is essential in reducing pain.

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