



The main prevention of pressure sores in stroke patients

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Abstract: Stroke is a neurological disorder that most often causes paralysis. Paralysis and weakness causes stroke patients to have bedrest for a long time. Long bedrests cause stroke patients at high risk for developing pressure sores. Prevention of pressure sores is very important by minimizing the risk factors for pressure sores. The purpose of this study is to determine the main precautions that cover wound care, fulfillment of nutrition and appropriate mobilization to prevent the occurrence of pressure sores. The research design used was descriptive analytic with the study respondents being stroke patients hospitalized in Gambiran Hospital, Kediri City. Sampling uses purposive sampling with a sample size of 40 respondents. The results of the analysis Ordinal Regression show nutritional fulfillment, mobilization and skin care have a p-value greater than 0.05, which means that the three actions can prevent the occurrence of pressure sores. Skin care, nutritional fulfillment and mobilization will maintain skin moisture, facilitate blood flow, ensure adequate delivery of oxygen and protein to the skin. Prevention of pressure sores should be done early so that pressure sores do not occur.

Keywords: Decubitus, Prevention, Skin Care, Nutrition, Mobilisasi.

1. Introduction

Prolonged bedrest will cause bone protrusions in the body to get pressured that could trigger decubitus injury (1). Bed rest or bedrest for more than 6 hours will increase the risk for decubitus injuries (2). The decubitus ulcer is a local tissue necrosis which tends to occur when soft tissue is compressed between the bone protrusion and the external surface for a long time (2,3). Stroke is a disease that most often causes disability, especially limb paralysis as a result of brain function disorders (4). Disability due to stroke affects the length of time the patient is hospitalized and the possibility of developing pressure sores is 67% in short-term hospitalized patients, while the possibility of developing pressure sores in long-term care is 3 months at 92% (5). Decubitus ulcer events in bed rest patients in Klada Husada Chakra Hospital were 17.65% (6) and in Indonesia, the incidence of pressure sores in hospitals reached 33% (7).

Decubitus ulcer is one indicator of the quality of hospital services, the high incidence of patients with pressure sores reflects the low quality of nursing services, therefore the need for early prevention efforts which are the responsibility of nurses (8).

The impact of pressure sores can increase length of stay, and maintenance costs and slow down rehabilitation programs (1,9,10). Complications often occur in grade III and IV decubitus ulcer, although they could occurred in superficial wounds. Decubitus ulcer are very susceptible to multibacterial and anaerobic infections, the effects of infection on decubitus ulcer could spread to bone and joint tissues or can cause septicemia or even death (11).

Decubitus ulcer can occur at the beginning of treatment, 26.7% of patients with bedrest have decubitus ulcer on day 2 and on the fourth day they increase to 40%. Decubitus ulcer prevention strategies must be started from the beginning of the patient to be treated to prevent the occurrence of pressure sores (12). Factors that influence the formation of decubitus wounds include friction, moisture, poor nutrition, anemia, infection, fever, peripheral circulation disorders, obesity, chacesia, and age (2,4,13) The large number of risk factors for decubitus ulcer should be taken into consideration when performing pressure sores prevention measures. The results of observations carried out by the researcher showed that prevention measures were still not maximally carried out, there was no standard for prevention of pressure sores. Appropriate precautions will be able to prevent

the occurrence of pressure sores (14,15). Researcher are interested in conducting research on the main prevention of decubitus ulcer injury in stroke patients.

2. Research methods

Based on the objectives of the study, the research design used was descriptive analysis i to obtain detailed datas for later analysis. The population studied by the researchers was all stroke patients who were hospitalized at Gambiran Hospital, Kediri. The sample in this study were some stroke patients who were hospitalized at Gambiran Hospital, Kediri. The sampling technique used purposive sampling, which was a technique for determining samples from populations that have certain characteristics up to the specified time limit (16). The inclusion criteria in this study were patients willing to become a respondent, patients who had bedrest for 3 days in the hospital, patients who had full awareness and were able to sign the research approval sheet, patients who would sign the research approval sheet themselves, but at patients who experience a decrease in consciousness and experience weakness generally, the research approval sheet was signed by attending family member. The sample size obtained was 40 respondents .The variable independent in this study was Prevention of Decubitus, which includes Skin Care, Nutrition and Mobilization Fulfillment while the variable dependent was the incidence of decubitus ulcer. The instrument used to measure decubitus ulcer prevention measures was used decubitus ulcer prevention checklist sheet.

Data for prevention of decubitus ulcer is carried out by observing the actions of the patient and interviewing the family. Decubitus ulcer data were collected by skin examination directly on the patient. After the data is collected, data validation is done to obtain valid data, then the data tabulation process then carried out according to each research variable. The next process was to analyze the data, in the first stage a descriptive analysis was carried out first, then bivariate analysis using the Spearman Rho test then to determine the effect of the prevention variables; skin care, nutritional fulfillment and mobilization for the incidence of decubitus ulcer were tested by Ordinal Regression. The software used to test was SPSS 19.

3. Research results

Table 1. Descriptive analysis of primary prevention of decubitus stroke patients

No	Independent Variables	category	Decubitus						Total	Percent
			Normal	Percent	Grade 1	Percent	Grade 2	Percent		
1	Skin Care	Less	2	14,3	8	57,1	4	28,6	14	100
		Enough	13	86,7	1	6,7	1	6,7	15	100
		Good	10	90,9	1	9,1	0	0	11	100
2	Fulfillment of Nutrition	Less than	5	31.3	6	37.5	5	31.3	16	100
		Sufficient	18	81.8	4	18.2	0	0	22	100
		Good	2	100	0	0	0	0	2	100
3	Mobilization	Less	2	16.7	6	50	4	33.3	12	100
		Sufficient	16	76.2	4	19	1	4.8	21	100
		good		7100	0	0	0	0		7100

Based on table 1 could be seen to act most of the skin care or skin care as much as 15 respondents still less while the highest incidence of decubitus ulcer in Grade 1 of 10 respondents. Most of the nutrition fulfillment variables (22 respondents) were included in the category enough eventhough there were still 16 respondents whose nutritional fulfillment efforts were still lacking. Most of the mobilization or movement and movement of positions were categorized as sufficient (21 respondents) which showed that most patients had changed their position both by nurses and families.

Table 2 Effect of changes in position, skin care and nutritional fulfillment on the incidence of decubitus ulcer in stroke patients

No	Variable	Estimated value	P-value	Description
1	Skin care	-1,199	0,042	significant
2	Nutrition Fulfillment	-2,302	0,011	Significant
3	Mobilization	-2,505	0,005	Significant

Based on test results with Ordinal Regression as in table 2 could be seen for skin care variables obtained p-value 0.042 which means that skin care significantly affect the occurrence of pressure sores. Efforts to fulfill nutrition are obtained p-value 0.005 or greater than α (0.05) which means that an increase in efforts to fulfill nutrition will be able to prevent decubitus wounds, whereas for patient mobilization variables p-value 0.002 or greater than α (0.05).) which means mobilization or attempts to change the position and movement of the patient can prevent the occurrence of pressure sores

4. Discussion

4.1. Effect of nutrition on decubitus ulcer

Based on the results of the study found that a significant relationship between nutrition in the incidence in developing decubitus ulcer in stroke patients. Disorders of nutritional intake, low protein intake, inability to eat alone and weight loss are independent predictors of the development of compressive wounds (17). Malnutrition is a common risk factor that may contribute to impaired wound healing, and the combination of immobility and loss of lean body mass consisting of muscle and skin, and the challenge of the immune system increases the risk of buritus and delay healing (18). Malnutrition is also associated with decreased muscle function, respiration function, immune function, quality of life, which are factors that influence the process of wound healing (19). Poor nutrition patients often experience serious muscle atrophy and decrease subcutaneous tissue. As a result of this change, the tissue that functions as a cushion between the skin and bones becomes less and less. Patients with poor nutritional status commonly experience hypoalbuminemia anemia, which each disorder can cause dikubitus, low albumin levels are also associated with slow wound healing, albumin is the most protein in plasma which plays a role in healing disease or recovery after injury or surgery (20). Decreased hemoglobin levels reduce the capacity of blood to carry nutrients and oxygen and reduce the amount of oxygen available for tissue. Anemia also interferes with tissue metabolism and wound healing (21).

Decubitus ulcer is a damage or necrosed skin beyond the tissue, even penetrates the muscles until it hits the bone due to continuous pressure on an area resulting in a disturbance of local blood circulation (22). Bedridden patients, who are elderly, who have neurological or cancer disorders, who live in public or private institutions, and who live in hospitals have an increased risk of being exposed to the institution (23). Patients in immobilized conditions tend to experience impaired nutrient intake. Immobilization conditions in stroke patients will cause nutritional status to be at risk, namely low albumin levels in blood serum and abnormal BMI that will cause pressure sores. Decubitus ulcer (also called a bed wound) is a wound caused by pressure on heavy bony points of an immobile person (such as the hip, heel, and elbow). Decubitus ulcer caused by damage to the skin and the scar tissue is damaged, but the risk of pressure sores can increase if it does not meet nutritional needs. Good nutrition makes the skin healthier and can reduce the risk of decubitus. Poor nutritional status, or dehydration, can weaken the skin and make people more susceptible to pressure ulcers. After complications occur in the site can be difficult to cure(24). Nutritional therapy in treatment at the site, found that there was a reduction in wound area in the intervention group, despite differences in size, (25). High protein nutrient intake provides some evidence that it might be a useful intervention, (26). According to Seied Hadi in Pressure Ulcer and Nutrition, explained that proper nutritional support plays an important role in preventing pressure sores and stimulating wound healing. the most important cure is prevention of bedsores in patients and proper nutrition based on evidence-based nutrition guidelines must be considered an important element in medical management. Therefore proper observation for nutritional status, collaboration with skilled nutritionists, and the provision of

special formulas consisting of macro and micronutrients are important aspects of management in the sites of patients with stroke. Decubitus ulcer could reduce global quality of life, contributing to rapid death in some patients. Therefore, prevention and their management are very important. Nutritional deficiencies and insufficient food intake are the main risk factors for decubitus and impaired wound healing (27)

4.2. Effect of mobilization on decubitus ulcer

Based on the results of the study, there was a significant relationship between mobilization to the incidence of decubitus ulcer in stroke patients. Decubitus ulcer is damage or death of the skin to the tissue under the skin, even penetrating the muscles until it hits the bone due to continuous suppression of an area resulting in local blood circulation disorders(22). Pressure affects cell metabolism by reducing or eliminating tissue circulation that causes tissue ischemia(28). Patients who experience disturbances in sensory input to pain and pressure have a high risk of disruption of skin integrity than patients with normal sensations. Patients who have intact sensory perceptions of pain and pressure can find out if one part of their body feels too much pressure and pain. When patients are aware and oriented they can change positions or ask for help to change positions(29)

Patients who cannot independently change the position of high risk of developing pressure sores. The patient feels pressure but cannot change position independently to remove the pressure. This increases the chances of decubitus. Skin and subcutaneous tissue can tolerate some pressure. But the biggest external pressure rather than capillary pressure will reduce or eliminate blood flow to the surrounding tissue. This tissue becomes hypoxic, causing ischemic. injury he process of pressure is greater than 42 mmHg and is not removed from the place that experiences hypoxia, the blood vessels will collapse and thrombosis, (30). The pressure removed before the critical point, the circulation in the tissue will recover through the physiological mechanism of reactive hyperemia. The skin has a greater ability to tolerate ischemia from the muscles, so pressure sores start from the bone with muscle ischemia associated with pressure which eventually widens to the epidermis (31).

Immobilization is a limitation of movement or physical limitations of the limbs and the body itself in spinning, sitting and walking, one of which is caused by a reduced state of fixed position such as sitting and lying down. Stroke, Parkinson's disease and peripheral nerve disorders also cause movement disorders and result in immobilization. (32) Effective progressive mobilization to reduce risk in the institution, (33). In Stroke patients immobility is at high risk for developing decubitus ulcers, such as paralyzed patients. The most useful way to prevent decubitus ulcers, and to treat them as they are, is to avoid excessive pressure by encouraging movement. At the same time, risk factors that encourage the development of pressure ulcers should be minimized as far as possible (15). to reduce the risk in the site of patients who are considered to have a high risk of developing press ulcers are positioned more frequently than patients who have low risk, (34). skin care, and positioning and repositioning schedules, supporting surfaces, effectiveness reduces the risk of being buried, (35)

The formation of compressive ulcers is a serious health problem in patients who are weak and immovable. After a stroke, patients are at special risk for pressure ulcers because they have many factors that contribute to skin damage. Abnormal sensations, contractures, malnutrition, immobility, and muscle atrophy and soft tissue often develop and may become complicated in old age. Prevention of compressive ulcers, rather than treatment of developing ulcers, should be the focus of care. Preventive measures include frequent repositioning; keep skin clean and dry; maintain adequate nutritional levels; and, especially in high-risk patients, using pressure relief mattresses. After pressure ulcers have been formed, in addition to closely observing the pressure prevention and reduction measures mentioned earlier, care includes careful wound care with various agents and possible surgical reconstruction, (31).

Decubitus ulcers that were once a major problem in bedridden patients, have become rare in western hospitals as preventive measures such as early mobilization, frequent repositioning of patients by turning to the other side every 2 hours, good skin care, use of special mattresses decubitus and layered heel chambers have become routine actions. It's easier to prevent decubitus ulcers than to treat them after they appear. In patients who are bedridden, the sacrum, buttocks, heels and ankles should be checked frequently. If pressure sores do not respond to conservative treatment, several days of antibiotic therapy can be justified, before definitive surgical debridement, (28). The more baring is not done, the higher the incidence of decubitus, to prevent the occurrence of pressure sores need intensive

treatment and care. This can be done by switching actions in stroke patients who experience hemiparesis. Individuals with limited mobility should always be assessed for additional factors that increase the risk of developing decubitus ulcers (36). That effective repositioning for prevention is buried in the site. These factors include immobility, incontinence, nutritional factors and changing levels of consciousness. Multidisciplinary teams must adopt validated risk assessment tools such as the Braden Scale or Norton Scale. Results recorded on this scale must be documented and used regularly to reassess patient risks (28).

4.3. Effect of Skin Care on decubitus ulcer

Impaired skin integrity can result from prolonged pressure, skin irritation, or immobilization and affect the appearance of pressure sores (29). Pressure ulcers or pressure sores are an area of cellular damage, both due to direct pressure on the skin resulting in pressure ischemia as well as friction strength which causes mechanical stress to the tissue. The most important action in maintaining skin integrity is to maintain skin hydration within reasonable limits (not too moist or dry) (31). Preventive measures to prevent the occurrence of pressure sores, namely risk assessment by using the Braden scale, skin care, nutrition, providing education, and giving pads and positioning / changing beds. Skin care is one of the recommended actions to be taken, keep skin clean and dry, and investigate and manage incontinence (Consider alternatives if excessive incontinence for age) and do not rub or massage the patient's skin with enthusiasm. Use a pH cleanser that is suitable and dry thoroughly to protect the skin from excessive moisture. Use water-based skin emollients to maintain skin hydration if possible (28,37–39). Pressure ulcers are local injuries to the skin or underlying tissue caused by prolonged pressure, exposure to shear or friction strength. Pressure ulcers represent the main concern for inpatients and health professionals who are responsible for their well-being. Risk Assessment, Skin Assessment, Surface Support, Nutrition and Repositioning of important components of patient care panels (40). Pressure ulcers (pressure sores) occur due to external pressure that produces prolonged ischemia, usually to the soft tissue area above it. Tissue ischemia occurs when external pressure exceeds capillary closure pressure (i.e., 25-32 mm Hg in healthy individuals), the minimum pressure which causes capillary collapse when applied to capillaries (13)..

Shear strength, constant humidity exposure, and heat buildup are also the main factors. For example, the stratum corneum, the outer layer of the skin, becomes 25 times more fragile at 100% relative humidity when compared to 25% relative humidity, and becomes 4 times more fragile at 95 ° F (35 ° C) rather than at 86 ° F (30 ° C), (41)

Regular skin care measures plus topical olive oil reduce pressure and ischemia so that bedsores can be prevented and light massage affects the risk of injury in the site, skin care can reduce the incidence in the site (39).

5. Conclusion

Fulfillment of nutrition, mobilization and skin care are the main actions to prevent decubitus injuries from stroke patients.

Fulfillment of Nutrition can increase Hb and Albumin so that the delivery of oxygen and protein to the skin tissue can be fulfilled. Mobilization will reduce the pressure on the skin so that the blood flow will return smoothly. Skin care will keep skin clean, moisture and skin friction can be reduced.

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