

# The relationship of skin integrity picture in stroke patients with the use of anti-decubitus mats at Hospital

## Relación del cuadro de integridad de la piel en pacientes con accidente cerebrovascular con el uso de colchones antiescaras en el Hospital

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### SUMMARY

**Introduction:** Stroke is one of the non-communicable diseases which is the concern health problem in the community. Stroke is more common in various countries, both developed and developing countries, such as Indonesia. This study aimed to determine the skin integrity in stroke patients using anti-decubitus mattresses at the hospital.

**Methods:** This study was a quantitative research design using a cross-sectional design, namely non-experimental research, for the relationship between independent variables (risk factors) and effect variables by taking instantaneous measurements. The population in this study were stroke patients with decubitus injuries treated at a hospital. The sampling technique in this study is consecutive sampling based

on a specific purpose or objective determined by the researcher. The sample in the study was 16 people. Analysis of univariate and bivariate data with fisher exact test results.

**Results:** The results of the study were the number of respondents who used an anti-decubitus mattress as many as 15 people (93.8 %) while those not using a mattress as many as one person (6.2 %) while the number of respondents based on skin integrity during less than seven days of treatment, namely improving as many as 15 people (93.8 %) while worsening as much as 1 person (6.2 %). Fisher's exact test analysis test obtained a  $p$ -value = 0.041.

**Conclusion:** There was a change in the degree of pressure sores in stroke patients using anti-decubitus mattresses at the hospital. It is hoped that there will be further research with a more significant number of samples with in-depth studies and controlling the factors that affect pressure sores.

**Keywords:** Anti-decubitus mattress, skin integrity, stroke.

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### RESUMEN

**Introducción:** El accidente cerebrovascular es una de las enfermedades no transmisibles, que constituye el problema de salud más temido en la comunidad. El accidente cerebrovascular es más común en varios países, tanto desarrollados como en desarrollo, como

*Indonesia. Este estudio tuvo como objetivo determinar la integridad de la piel en pacientes con accidente cerebrovascular que utilizan colchones antiescaras en el hospital.*

**Métodos:** *Este estudio fue un diseño de investigación cuantitativo utilizando un diseño transversal, es decir, una investigación no experimental, para la relación entre las variables independientes (factores de riesgo) y las variables de efecto mediante la toma de medidas instantáneas. La población de este estudio fueron pacientes con accidente cerebrovascular con lesiones por decúbito tratados en el hospital. La técnica de muestreo en este estudio es un muestreo consecutivo basado en un propósito u objetivo específico determinado por el investigador. La muestra en el estudio fue de 16 personas. Análisis de datos univariados y bivariados con resultados de pruebas exactas de Fisher.*

**Resultados:** *Los resultados del estudio fueron el número de encuestados que usaban colchón antiescaras fue de 15 personas (93,8 %), mientras que los que no usaban colchón fue de una persona (6,2 %), mientras que el número de encuestados basado en integridad de la piel durante menos de siete días de tratamiento, es decir, mejoró hasta en 15 personas (93,8 %) y empeoró hasta en 1 persona (6,2 %). La prueba de análisis de la prueba exacta de Fisher obtuvo un valor de  $p = 0,041$ .*

**Conclusión:** *Hubo un cambio en el grado de las úlceras por presión en los pacientes con accidente cerebrovascular que utilizan colchones antiescaras en el hospital. Se espera que se realicen más investigaciones con mayor número de muestras con estudios en profundidad y control de los factores que afectan las úlceras por presión.*

**Palabras clave:** *Colchón antiescaras, integridad de la piel, ictus.*

## INTRODUCTION

Stroke is one of the non-communicable diseases that are the most feared health problem in the community. Stroke is caused by non-traumatic cerebral blood circulation disorders. Strokes can cause death without finding other causes other than vascular causes (1-3). The incidence of hemorrhagic stroke is 17 %, and ischemic stroke is about 83 % of all stroke cases. Stroke is the number 5 cause of death in America (4,5). Indonesia has the highest ranking of stroke sufferers in Southeast Asia, so stroke is a significant and urgent problem. According to the World Health Organization (WHO), in 2018,

the prevalence of pressure sores in the world was 21 % or about 8.50 million cases. In Indonesia, the incidence of pressure sores is 8.2 per 1 000 population. The incidence and prevalence of pressure sores in America are quite high and need attention from health workers. The results of research in several government hospitals in Indonesia, the incidence of pressure sores in bed rest patients is 15.8 % to 38.18 %. In comparison, the 2018 Basic Health Research is a very high figure for Indonesia at 10.9 % per population mile. The highest province is East Kalimantan province, with a 14.7 % per mile population of East Kalimantan, and the lowest in Papua province is only 4.1 % per mile population of Papua based on doctor's diagnosis. Meanwhile, South Sulawesi Province itself is not left behind with a very high figure of 10.7 % per population mile (6). The prevalence of stroke in the 2018 Rikesdas data reached 10.9 per mile. West Sumatra Province is a province that has a fairly high rate of almost 10.9 per mile. In Pariaman, the incidence of stroke has also increased. In Pariaman Hospital in 2017, there were 162 cases and in 2018 there were 193 cases. As a result of the increasing number of stroke patients in this hospital, many patients are currently lying-in care for a long time. For the period January 2019 to January 2020, there are 17 risks of pressure sores due to prolonged bed rest (7,8).

One of the effects of stroke is pressure sores which can cause damage to skin integrity. Pressure on the skin in direct contact with the bed surface will cause pressure sores. People in their daily life call it that because it is too long to lie in bed without being helped to change its position. Meanwhile, damage to skin integrity occurs due to prolonged pressure, skin irritation, or immobilization, causing pressure sores. Research results by Lailiatius et al. (2017) showed that the length of hospitalization for pressure sores in immobilized patients was 88.8 %, and decubitus ulcers appeared with an average length of stay on the fifth day of treatment (9-12).

Various intervention efforts can be made to prevent pressure sores, such as clinical practice guidelines issued by the American Health of Care Plan Resources (AHCPR), consisting of 3 categories, namely skin care and early treatment, including risk assessment of patients with pressure sores, improving the patient's

age condition, maintenance, good skin care, prevention of ulcers by lying down. The second intervention that can be done is using various boards, anti-decubitus mats, or good bedding, while the third intervention is educating patients and families (10,13-17).

In a study conducted by Manzano in 2014 under the title Comparison of Pressure Ulcer Prevention in Patients With Two Repositioning Schedules Using Mechanical Ventilation and Compressed Air Mattresses, the results showed a strategy aimed at increasing the frequency of repositioning (2 hours and 4 hours) in patients under Mechanical ventilation (MV) and on Alternating Pressure Air Mattress (APAM) did not reduce the incidence of pressure ulcers, but these interventions were able to reduce side effects of long lie down and reduce the workload of care (18). While the study results were the average length of time spent on the mattress for 31 days. At the end of the evaluation, none of the patients experienced pressure sores when using the mattress. These results indicate that these anti-decubitus mattresses are effective when using interventions to prevent pressure ulcers (18-20).

The results of observations at Pariaman Hospital conducted by researchers on 6 stroke patients who have been hospitalized for a long time have a high risk of impaired skin integrity such as pressure sores. Impaired skin integrity occurs due to prolonged pressure, skin irritation, or immobilization causing pressure sores. Therefore, to reduce the incidence or reduce pressure sores in stroke patients, one of the interventions that can be done is to apply the anti-decubitus matrix in the hospital correctly and keep repositioning the bed. So it can be concluded that pressure sores are very common in patients with long-lying cases such as stroke, so it is necessary to provide skin care intervention using an anti-decubitus mattress procedure. Therefore, researchers are interested in conducting research in hospitals on the relationship between the use of anti-decubitus mattresses and skin integrity among stroke patients.

**METHODS**

The research design was quantitative research. This study uses a cross-sectional design, a non-

experimental type of research. It is often used for the relationship between independent variables (risk factors) and effect variables by taking instantaneous measurements. The population in this study were stroke patients with decubitus injuries treated at a hospital in Pariaman City. The sampling technique in this study is the non-probability sampling technique with consecutive sampling is a method of selecting samples based on certain goals or objectives determined by the researcher. The sample in the study was 16 people. Statistical analysis of univariate and bivariate data conducted with fisher exact test results.

**RESULTS**

Based on Table 1, it can be seen that the same number of respondents for the age category in this study were found at the age of 46-55 years, namely 8, as well as for those aged 56-70 years. Furthermore, this study found that the male gender was 9 respondents (56.3 %) and the female respondents were 7 (43.7 %). It can be seen that of the 16 respondents, 15 respondents used anti-decubitus mattresses (93.8 %) while 1 person did not use mattresses (6.2 %). Furthermore, it can be seen that of the 16 respondents, there were a number of respondents based on skin integrity for less than seven days of treatment; namely,

Table 1  
Frequency Distribution of Respondents

Characteristics	Frequency (f)	Percentage (%)
Age		
46-55	8	50
56-70	8	50
Gender		
Man	9	56.3
Woman	7	43.7
Using an Antidecubitus Mat		
Use	15	93.8
Do Not Use	1	6.2
Skin Integrity		
Advantage	1	6.2
Disadvantage	15	93.8
Total	16	100

there was no deterioration as many as 15 people (93.8 %) while there was a deterioration of 1 person (6.2 %).

Based on Table 2, it can be seen that of the 16 respondents, 15 respondents (93,8 %) using an anti-decubitus mattress showed no significant deterioration in the skin integrity of stroke patients compared to respondents who did not use an anti-decubitus mattress, only 1 person (6.2 %) indicates that the integrity of the skin is deteriorating. Therefore, it can be concluded that there is a relationship between the use of anti-decubitus mats and skin integrity in stroke patients. Furthermore, fisher’s exact test results obtained a p-value = 0.041, meaning there is a significant relationship between the use of anti-decubitus mattresses and skin integrity in stroke patients.

Table 2  
Correlation between Antidecubit Mattress Use and Skin Integrity in Stroke Patients

Mattress Use Anti- Decubitus	Skin Integrity				p-value
	Advantage		Disadvantage		
	f	%	f	%	
Use	15	93.8	1	6.2	0.041
Do Not Use	1	6.2	15	93.8	
Total	16	100.0	16	100.0	

**DISCUSSION**

Based on results showed a significant relationship between the use of anti-decubitus mattresses and skin integrity in stroke patients. In the hospital, the handling actions that a nurse always takes to prevent skin integrity disorders, in this case, decubitus, include a small pillow as support, doing bed over every 2 hours, at night, the period is extended every 4 hours so that the patient can sleep undisturbed (19). Sleep can support anabolic processes; thus, healing wounds can be facilitated. In this study, nurses focused on using anti-decubitus mattresses used not only at this time but carried out continuously according to the patient's condition. In addition, the nurse performs bed over, but it is done in the next 4-5

hours. According to the 2018 Indonesian Nursing Intervention Standards, the therapeutic action for treating pressure sores is to use a special bed or mattress to treat the skin due to emphasis on bone prominences (21-23).

This is in line with the following discussion that pressure sore prevention is a nurse's role in providing patient services. Efforts to prevent pressure sores were done as early as possible since the patient is identified as being at risk for pressure ulcers. Prevention of pressure sores should focus more on efforts to prevent excessive and continuous pressure in addition to improving other risk factors (13,24).

In the case of stroke patients who are on bed rest, the most important thing to do is skin care to prevent pressure on the skin. Prevention of pressure on the skin that can be given is surface support, in this case, the use of a bed with the mechanical application of an anti-decubitus mattress. The purpose of the surface support provided is to reduce pressure on the skin and bone/tissue. The anti-decubitus mattress used in hospitals can be adjusted to the patient's body contour so that the pressure distributed through the surface of the anti-decubitus mattress can concentrate and contribute to a more limited area (13,19).

This study's results align with Rustina's (2017) research on the effect of using anti-decubitus mattresses on the degree of decubitus in bedrest patients. The study's results on 9 respondents showed that after being given treatment using an anti-decubitus mattress for 10 days, a significant effect was obtained on the use of anti-decubitus mattresses in bed rest patients with grades 1 and 2. So it can be assumed that the improvement of skin integrity in stroke patients (24).

Skincare is one for preventing pressure sores, where it should be focused on efforts to prevent excessive pressure and the length of treatment days. The results of this study indicate that changes in pressure on the initial day of hospitalization to the last day of hospitalization for 7 days were found in patients using an anti-decubitus mattress, while in patients who did not use an anti-decubitus mattress, the reason being that the patient did not want to use it did not have good pressure change progress. Provision of communication, information, and education

(IEC) media regarding the prevention (8). In addition, several factors can influence changes in the wound or the occurrence of pressure, namely the patient's nutritional status, age, weight, and the strict concept of changing position. In addition, it is also essential to socialize and increase knowledge and public awareness about healthy lifestyles (7,25).

### CONCLUSION

Improving skin integrity in stroke patients is skin care, one of which is the prevention of pressure sores which must be focused on preventing excessive pressure and length of treatment days, as well as factors that can affect wound changes or the occurrence of burns. Prevention of pressure on the skin can be given is the use of a bed with the mechanical application of an anti-decubitus mattress. The ultimate goal is to reduce pressure on the skin and bone or tissue and improve the quality of life among patients.

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